Al Faez

Computer and

ICT

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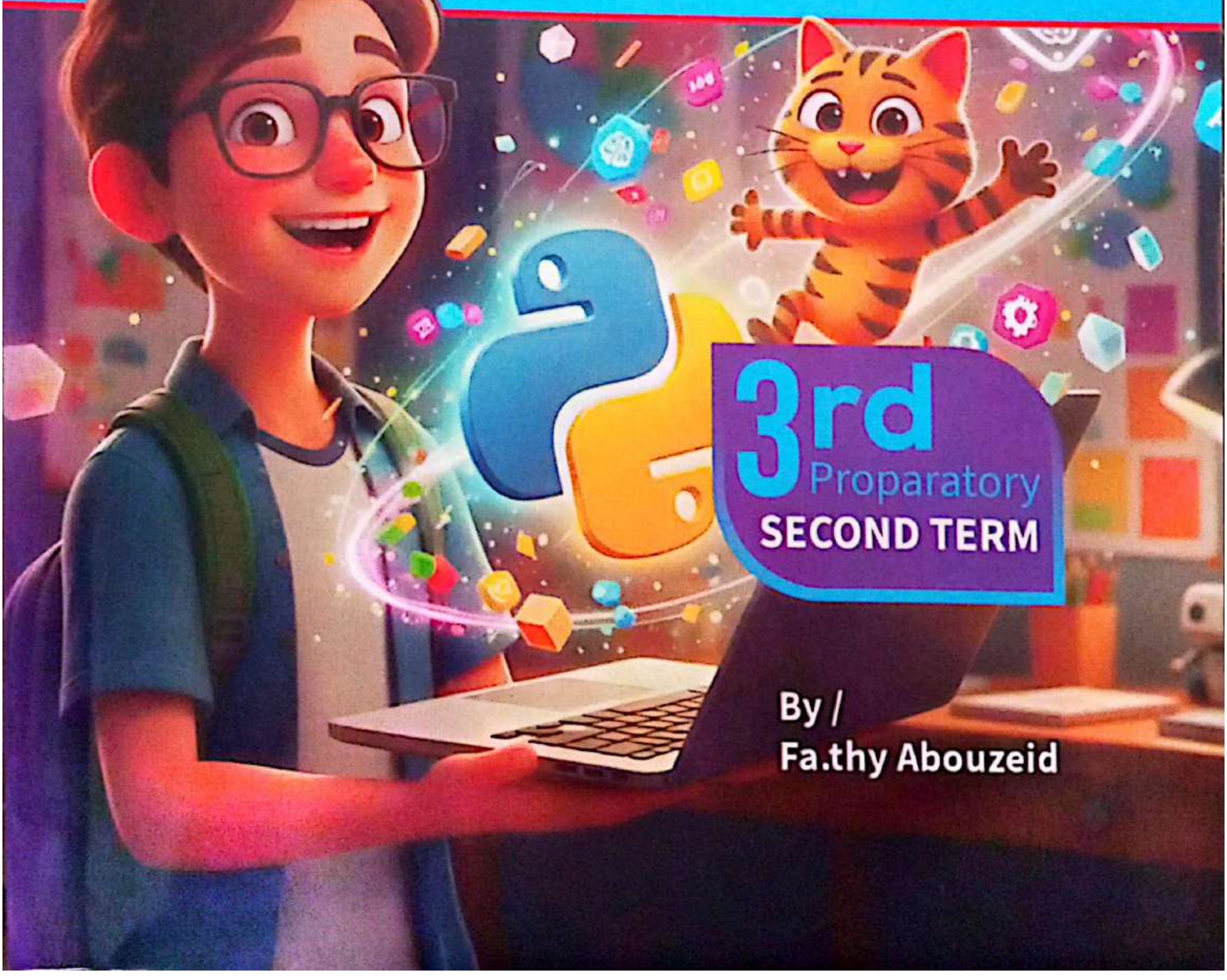

3rd Proparatory

SECOND TERM

By /
Fa.thy Abouzeid

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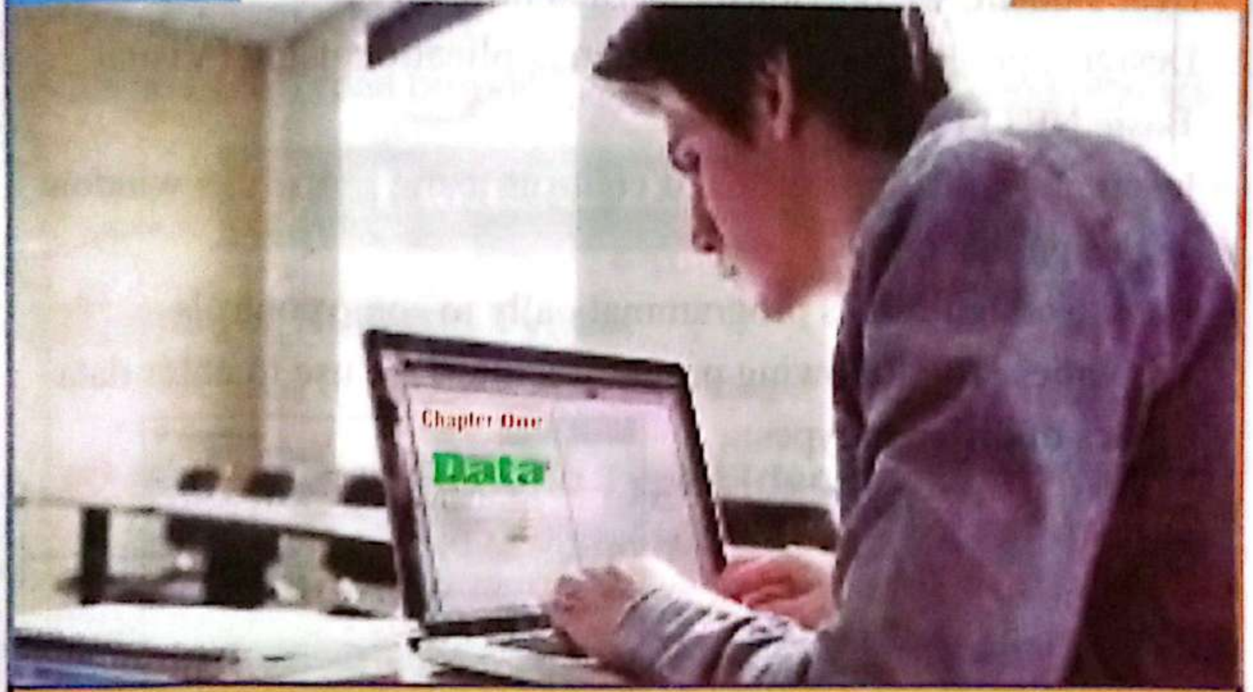
Chapter One

Data



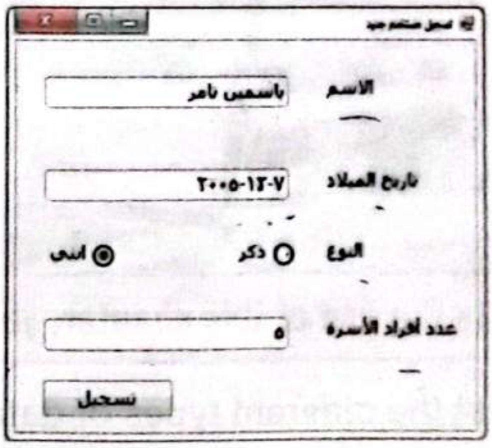
∗ By the end of this chapter, you will be able to:

- List the different types of data .
- Choose the appropriate (data type).
- Declare variables.
- Declare constants.
- To clarify concept of Assignment statement).
- Assign values for variables.
- Set priorities for implementation of the arithmetic operations.

Data

★ PREFACE:

- **Dear student**, we previously learned how to:
- Design a program's interface of an application using (Visual Basic.NET) language.
- Insert and adjust properties of controls using properties window in design mode.
- How to assign values programmatically to some controls properties. The following program's interface use to enter data values of different types:



تسجيل مستخدم جديد

الاسم: ياسمين تامر

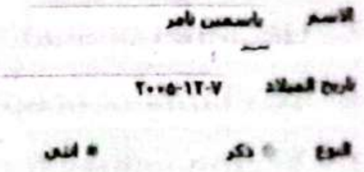
تاريخ الميلاد: ٢٠٠٥-١٢-٧

النوع: ○ ذكر ● انثى

عدد افراد الأسرة: ٥

* **Note** the following: (ياسمين تامر – 7/12/2005 – انثى – 5) are data values of different types where;

- **The Name:** represents a **Text**.
- **Birthdate:** represents a **Date**.
- **Type:** represents a **Boolean** value.
- **The number of family members:** represents a **numeric** value.



الاسم ياسمين تامر

تاريخ الميلاد ٢٠٠٥-١٢-٧

النوع ● ذكر ● انثى

* On entering these data, it is temporarily stored in the computer memory (RAM). To deal with these data we must assign a name and a type to it in memory.

- The data type depending on the nature of the data element stored

Data types

* Visual Basic.Net Language provides many data types, which allow the user to store input values from the user, or values resulting from the execution of instructions and commands of the program.

- Some Data Types provided by (Visual Basic.Net) Language are:

① Numeric Data Types

(A) Integer Numeric Types.

Declared by: **Byte – Short – Integer – Long**.

(B) Non-Integer Numeric Types (decimal).

Declared by: **Double – Single – Decimal**.

② Character Data Types

Declared by: **String – Char**.

③ Miscellaneous Data Types

- Miscellaneous data that do not fall under the Numeric or the character types (such as: **Object – Date – Boolean**).

- Note:

- Each classification of Data Type has more than one type.
- Each data type occupies a storage space in the memory:

For example, the **integer** data type occupies **4 bytes** of memory storage.

- Each data type has a range of values (minimum value and maximum value):

For example the range of values the data type **(Byte)** starts with **'0'** and ends with **'255'**.

Constants & Variables

First Constants

- ✱ They are places reserved in (RAM) that have data types; on declaring constants, name and data types are determined for them.
- ✱ They take a fixed value and do not change during the progress of the program, such as: some **mathematical constants like π**. or some of the **constants in physics** like **gravity acceleration**. **the speed of light** and **the speed of sound** .etc.

Naming rules of Constants & Variables

- **On naming constants and variables preferably name expressing its purpose so that:**

(1) Variable names must begin with a letter or underscore (_).

(2) Variable names should not contain symbols or special characters (e.g.: ?,*,^, -, +,. etc.).

(3) Do not use reserved words (Visual Basic.NET Language Keywords) such as (single, Integer, Dim, As**).**

✱ **Note:** It also must be the choice of the appropriate type of each of the constants and variables.

- which had been clarified in data types to commensurate with the nature of the data to be stored.

Declaring Constants

- It is a statement in which the name and type of data and value of the constants are defined through a certain code.
- Use the **(Const)** in the declaration of the constants in the language of the VB.NET, as illustrated in the following syntax:

Const	**Constant Name**	**As**	**Data Type**	**= Value**

Where:

- **Const:** declaration command about constants.
- **Constant Name:** the name of the constant.
- **Data Type:** the type of data stored in the constant.
- **Value:** the constant value that stored in the declared constant.

Examples:

```
Const C_Name As String = "جمهورية مصر العربية"
```

- **Meaning of code:** the constant **(C_Name)** was declared, of data type **(String)** and, its text value "جمهورية مصر العربية" is assigned during the declaration.

```
Const Pi As Single = 14,3  Or  Const Pi As Single = 22/7
```

- **Meaning of code:** the constant **(pi)** was declared, of data type **(Single)** and, its numeric value 22/7 or 3.14 is assigned during the declaration.

```
Const B_Date As Date = #25/10/2005#
```

- **Complete:** The constant (............) was declared in memory, of data type (..............) and, the value .... is assigned during the declaration.

- **The answer:** the constant **(B_Date)** was declared in memory, of data type **(Date)** and, the value **#25/10/2005#** is assigned during the declaration.

Notice:

- The double quotes " " are used if the value of constant is a **string** value.
- The hashes # # are used if the value of constant is **date** or **time**.

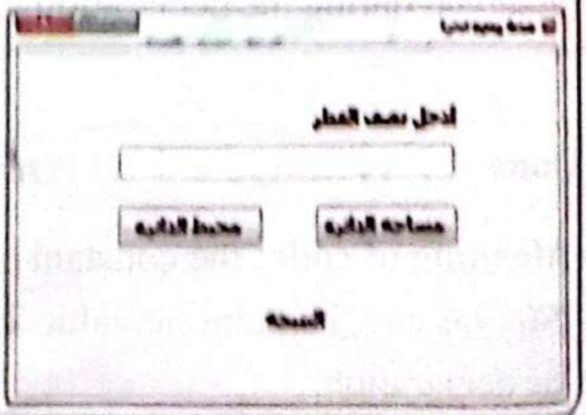
Exercise

- Prepare a program using VB.NET language that receives a numeric value for the radius of a circle, and its circumference and area is calculated when you press the "Command button".

Note: Area of a circle = (πr^2).

- The circumference of a circle = $(2 \pi r)$.
- Where: (r) represents the radius, $(\pi = 22/7)$.

(1) Design the Form window. as shown in figure.



(2) Open the Code window by pressing the button **(F7)**.

- Add the **(Click)** event procedure for **(Button1, Button2)** as the following:

```
Public Class Form3          ①
    Private Sub Button1_Click (ByVal sender As Object, By
    End Sub
                            ②
    Private Sub Button2_Click (ByVal sender As Object, By
    End Sub
End Class
```

Adding Event Procedures to the Code Window

(3) Type the code that calculates the area of a circle in the scope of the event procedure (Button1_Click).

- Display the output in label control tool (Label2) when you click on (Button1).

```
Private Sub  Button1_Click  (ByVal sender As Object ,
        Dim Radius As Single
        Const pi As Single = 22 / 7
        Radius = TextBox1.Text
        Label2.Text = pi * Radius ^ 2
End Sub
```

The code to calculate the Area of a circle

Notice: We conclude from the previous code the following:

★ The variable (Radius) is declared and its type is a decimal number (Single). `Dim Radius As Single`

★ The constant (Pi) is declared with assigning the value (22/7) to it. `Const Pi As Single = 22 / 7`

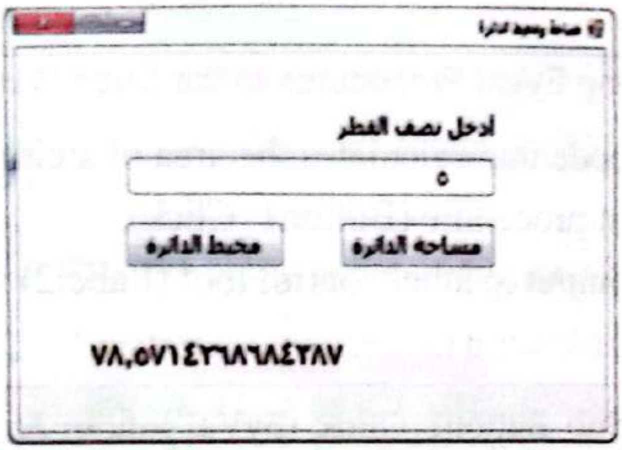
★ The value entered in Text box is assigned to the variable (Radius). `Radius = TextBox1.Text`

★ The result of expression (Pi * Radius ^ 2) is assigned to the text property of the control tool (Label2).

```
Label2. Text = Pi * Radius ^ 2
```

(4) Run the program by clicking on start debugging icon or pressing (F5) key to perform (Start Debugging).

- Then we enter the value of the Radius and we click the button (مساحة الدائرة) as the following:



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Calculation of the area bearing in mind its radius

(5) Make sure of the output, which is obtained after running the program.

- Dear student, in the same way, write the code of (Button2) to Calculate the circumference of a circle.

Questions ?

★ **First: State whether the following statements are true (✓) or false (×):**

❶ The Excellent coder is who saves storage space in the computer's memory. (   )

❷ A storage space in the memory: for the data type (Byte); when used, it occupies **(8 bytes)**. (   )

3. The constant of type **Double** takes the value **True** or **False**.( )
4. Declaring constant is done using the **RAM** word. ( )
5. One of the rules for naming constants in VB.NET is constant names must begin with a number or a letter. ( )
6. **Const** Single **As** Byte = "22". ( )
7. A2016 is a correct constant name. ( )
8. Constants of types (Integer, Byte, Long) are used to store integers only. ( )

★ Second: Put each word in the right place:

(Integer – textual – Object – Const – Constants & Variable – Boolean – String – Boolean – Byte)

1. Data type of the property (Text) is ……………………..
2. …………… is a word to declare the constant.
3. …………… is a data type of the (Auto Size) property.
4. The …….. data type not falls under the numeric or textual types.
5. ………. when naming it, you must note that the name being with a letter.
6. Constants of type …………………… takes the values (**0** : **255**).
7. The type of constants …………………. used to store integer only.
8. Constant of type ………………….. takes the value **True** or **False** .
9. We are used constant of type …………. to put the student's name.

★ Third: Give the suitable term to the following sentences:

1. Data type for storing date and time.
2. Data type for storing characters values.
3. Stored locations in the computer memory **"RAM"** and it has a data type. Its value can not change during the program runtime.

④ Data type in the form of an object.

⑤ Data type for storing logical values (True - False).

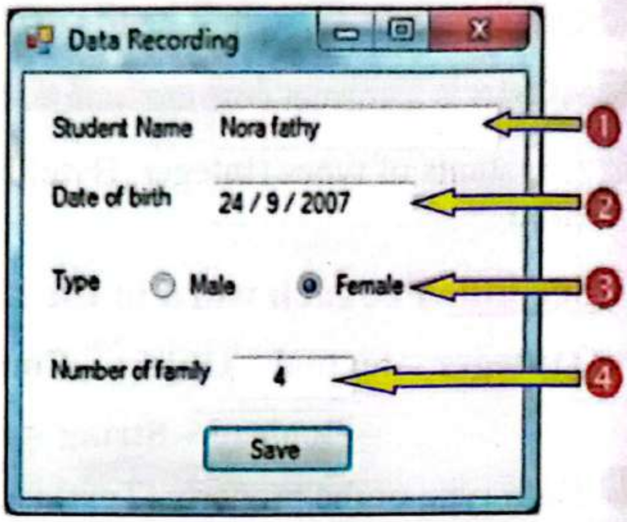
★ **Tourth: In the following Form window, define the corresponding data type for each input:**

① ....

② ....

③ ....

④ ....



Data Recording

Student Name Nora fathy

Date of birth 24 / 9 / 2007

Type ○ Male ● Female

Number of family 4

Questions from governorates exams

★ **First: Put a tick (✓) or (x):**

① **Const G As Boolean** = False. (الغربية) (   )

② Each data type has a special storage area in the computer memory. (القليوبية) (   )

③ It is allowed to use the space in the variable name. (   )

④ The data type **Char** is of the integer. (دمياط) (   )

⑤ The data types (Short, Integer, Long) are used for storing the numbers containing decimals. (دمياط) (   )

⑥ Miscellaneous Data Types are those data that; do not fall under the Numeric or the Character types. (المنوفية) (   )

⑦ Constants are places reserved in the (RAM) and, have data types; these values cannot be changed during program execution.(   )

Specifying the scope of declaration for variables and constants

- When declaring variable or constant in an event, it can't be used out of the range of this event.
- It is determined the scope of the use that variables or constants by Place of declaring.
- There are levels to declare the constants and variables you should take care of, for example, if we add the code to calculate the circumference of a circle, as follows:

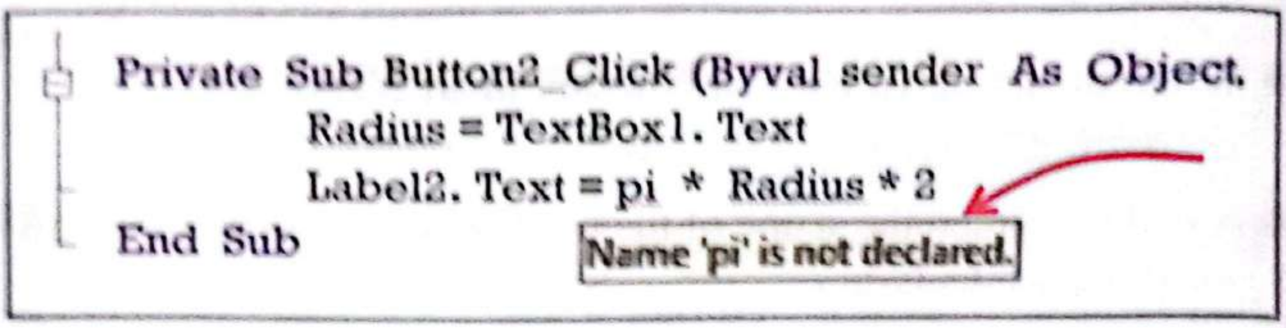
```
Private Sub Button1_Click (Byval sender As Object,
    Dim Radius As Single
    Const pi As Single = 22 / 7
          Radius = TextBox1. Text
          Label2. Text = pi * Radius ^ 2
End Sub
```

Name 'Radius' is not declared.

```
Private Sub Button2_Click (Byval sender As Object,
          Radius = TextBox1. Text
          Label2. Text = pi * Radius * 2
End Sub
```

- An error message will appear that means that:
- The variable (Radius) and the constant (pi) were not recognized, where it was declared in the procedure of command button (Button1).
- And thus we know that they are undefined in the procedure of command button (Button2).

- You can make sure of that from the yellow rectangle.
- The yellow rectangle appears when pointing with the mouse to the variable (Pi) in the second line.

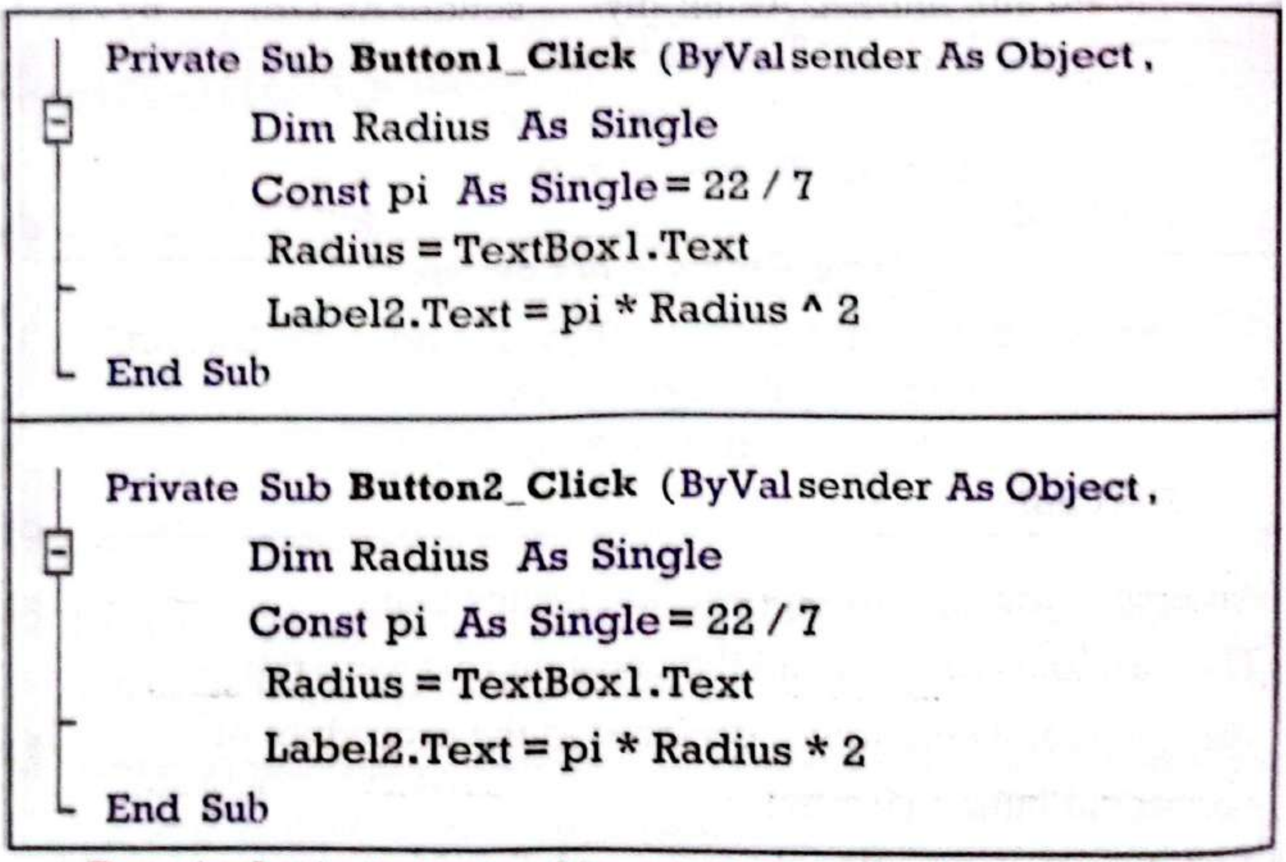


```
Private Sub Button2_Click (Byval sender As Object,
        Radius = TextBox1. Text
        Label2. Text = pi * Radius * 2
End Sub
```

Name 'pi' is not declared.

- To solve this problem:

- We will repeat the declaration of the variable **(Radius)** and the constant **(Pi)** in the scope of the Event Procedure **(Button2_Click)** as follows:



```
Private Sub Button1_Click (ByVal sender As Object ,
        Dim Radius As Single
        Const pi As Single = 22 / 7
        Radius = TextBox1.Text
        Label2.Text = pi * Radius ^ 2
End Sub
```

```
Private Sub Button2_Click (ByVal sender As Object ,
        Dim Radius As Single
        Const pi As Single = 22 / 7
        Radius = TextBox1.Text
        Label2.Text = pi * Radius * 2
End Sub
```

The code after the declaration of the variable (Radius) and the constant (Pi)

Or **we declare the variable (Radius) and constant (pi) on the level of class (Form3).**

- And thus we do not need to declare them on the level of the event procedure for each of the command button (Button1) or (Button2), as follows:

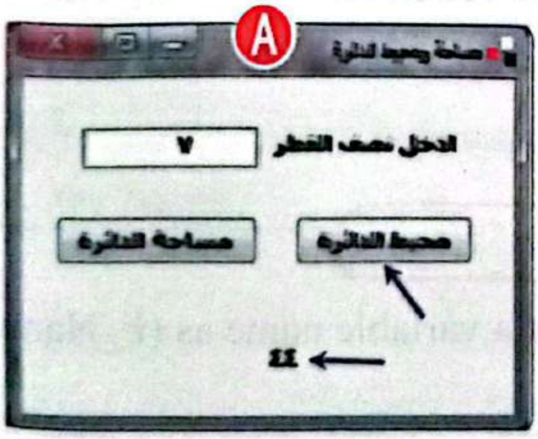
```
Public Class Form3
        Dim Radius As Single
        Const pi As Single = 22 / 7

   Private Sub  Button1_Click  (ByVal sender As Object ,ByVal
            Radius = TextBox1.Text
            Label2 . Text = pi * Radius ^ 2
        End Sub

  Private Sub  Button2_Click  (ByVal sender As Object ,ByVal
            Radius = TextBox1.Text
            Label2 . Text = pi * Radius * 2
        End Sub
    End Class
```

إعلان المتغيرات والثوابت على مستوى التصنيف "Form3"

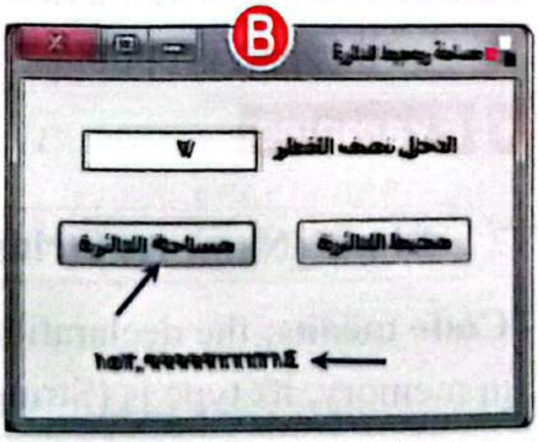
The declaration of the variable (Radius) and constant

- When you run the program by pressing on (F5) to do (Start Debugging), and enter a radius, we get the output, as follows:

(A) Click button "محيط الدائرة".


A
مساحة ومحيط الدائرة
ادخل نصف القطر
٧
مساحة الدائرة
محيط الدائرة
٤٤

(B) Click button "مساحة الدائرة".


B
مساحة ومحيط الدائرة
ادخل نصف القطر
٧
مساحة الدائرة
محيط الدائرة

CamScanner الممسوحة ضوئيا بـ

Second Variables

- Variables are reserved places in computer memory (RAM), declared and determined by its name and type (Data Type), and its value usually changes during the running of the program.
- The variable can take initial value, then value changes during the running of the program, such as: price of product - the value of the tax - the address of employee etc.

Variables Declaration

★ We use the Command (Dim) to declare a variable in VB.NET language, as shown in the following syntax:

Dim	Variable Name	As	Data Type	[=Initial Value]

Where:

- **Dim:** is the declaration of variables.
- **Variable Name:** is a variable name.
- **Data type:** is the data type to be stored in the variable.
- **Initial value:** is the initial value that is stored in the declared variable and this part is optional.
- **Value:** The initial value that is stored in the declared variable, this part is optional.

★ Examples:

Dim F_Name As String

- **Code means:** the declaration of a variable name as (F_Name) in memory, its type is (String).

Dim Total_Price As single

- **Code means:** Code means: the declaration of variable its type (Single), name as (Total_Price) in memory.

Dim Today As Date = # 20/10/1990 #

- **Complete:**
- **Code meanning:** The declaration of variable with the type .... , name as (..................) in memory, and the initial value is (.................) for it.
- **The answer:**
- The declaration of variable with the type Date, name as **Today** in memory, and the initial value is 20/10/1990 for it.

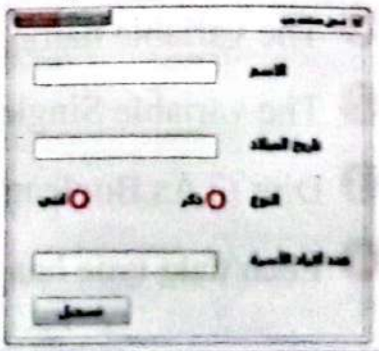
Notice:

- ★ The double quotes " " are used if the value of variable is a **string** value.
- ★ The hashes # # are used if the value of variable is **date** or **time**.

Exercise

- Write VB.NET code necessary to declare the variables we need to receive the data that the user entered through a form "new user registration form" by following these steps:

(1) Design a Form window as in the figure.



(2) Use the following table to declare variables , as shown in the table:

Captions of Control tools	Data Type	Variable Names
اسم المستخدم	**String**	**U_Name**
تاريخ الميلاد	**Date**	**U_B_D**
النوع	**Boolean**	**U_Gender**
عدد أفراد الأسرة	**Integer**	**U_C_F**

(3) Add the (Event Procedure), also called (Event Handler) for the button (تسجيل) by double clicking on it.

(4) Write the following code:

```
Private Sub Button1_Click (ByVal Sender As
        Dim U_Name As String
        Dim U_B_D As Date
        Dim U_Gender As Boolean
        Dim U_C_F As Integer
End Sub
```

Variables declaration

Questions ?

★ **First: State whether the following statements are true (✓) or false (×):**

❶ The variable name, should express its content. **(الشرقية)** (   )

❷ The variable Single is used for storing the text data. **(قنا)** (   )

❸ Dim G As Boolean = False **(الغربية)** (   )

❹ Each data type has a special storage area in the computer memory. (   )

❺ It is allowed to use the space in the variable name. (الأقصر) ( )

❻ The data type Char is of the integer. (دمياط) ( )

❼ The data types (Short, Integer, Long) are used for storing the numbers containing decimals. (دمياط) ( )

❼ 5Magdy is a valid constant name. ( )

❾ Dim Single As Byte = "21,5". ( )

❿ The variables of type Single are used to store integers only.( )

★ Second: Complete the following statements:

❶ When naming ...., you must note that the name being with a letter.

❷ The variable .... takes the values (**0 : 255**).

❸ The type of variables .... used to store integer only.

❹ Variable of type .... takes the value **True** or **False** .

❺ We are used variable of type .... to put the student's name.

❻ .... is a word to declare the constant.

❼ .... is a data type of the (Auto Size) property.

★ Third: Select the correct answer from the brackets for each of the following:

❶ To store the name of the student inside a variable, we use this kind of variable. (Integer – Short – String – Single) (الدقهلية)

❷ Variable of type .... takes the value True or False.
(Short – Single – String – Boolean) (أسوان)

❸ Rules of naming variable in the VB.NET, you must start with.
(Number – any symbol – Character – any number)

❹ The following words of the types of variables except the floor.
(Me – Byte – Integer – Single) (أسيوط)

Assignment statement

- ✱ It is assigning a value to a constant or variable.
- ✱ It is a statement that has two sides (right hand side and left hand side) separated by the assignment operator (=).
- ✱ It takes the value on the right side of the assignment operator (=) and stores it in the variable or constant on the left.

Examples: **Area = 5 * 3**

Left side	Assignment operator	Right side
Area	**=**	**5 * 3**

- The result of multiplying two numbers (**5** and **3**) has been assigned to the variable "**Area**".

Left side	Assignment operator "="	Right side	Example
Variable	=	Abstract value	A = 5
Variable	=	The value of a variable	A = 5 B = A
Variable	=	The value of Expression	A = 5 B = A + 3 * 2
Property	=	Value relay on the property	TextBox1.Text="Egypt"

Examples

Abstract value:

Dim A As Integer إعلان متغير باسم A نوعه رقمى صحيح .

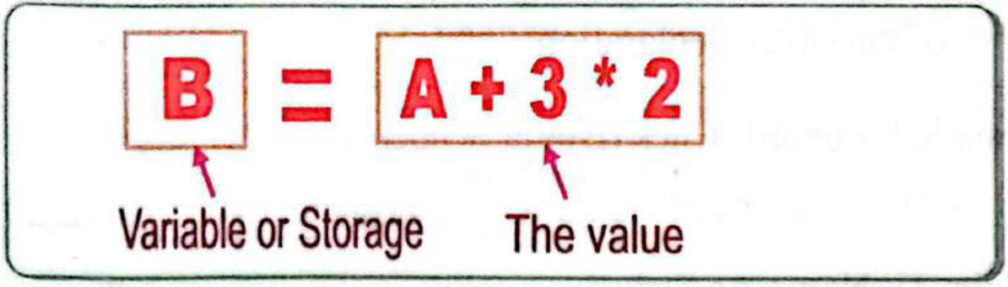
A = 5 تخصيص قيمة مجردة (5) للمتغير A .

The value of a variable:

```
Dim A As Integer = 5      ' إعلان متغير باسم A نوعه رقمى صحيح وقيمته 5
Dim B As Integer          ' إعلان متغير باسم B نوعه رقمى صحيح
    B = A                 ' تخصيص قيمة المتغير A للمتغير B
```

The value of the expression:

```
Dim A As Integer = 5      ' إعلان متغير باسم A نوعه رقمى صحيح وقيمته 5
Dim B As Integer          ' إعلان متغير باسم B نوعه رقمى صحيح
    B = A + 3 * 2         ' تخصيص ناتج تعبير حسابى للمتغير B
```



The value of Property:

```
Dim U As String = "Egypt"     ' إعلان متغير باسم U نوعه حرفى
    U = Textbox1.Text         ' تخصيص قيمة الخاصية Text للمتغير U
```

summary:

Left side	Assignment operator	Right side may be:
Variable **OR** **Property**	=	**(1) Abstract value.** **(2) The value of variable.** **(3) The value of the expression.** **(4) The value of Property.**

Notice:

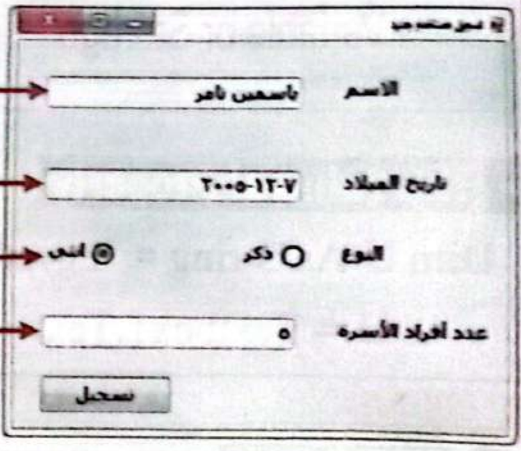
- The value which needs to be stored should be suitable to the variable or property type.
- The variable or the property name in which the value will be stored should be at the left of (=) sign.
- The properties are places for storing data and they have data type.

Exercise

*** Assigning value to Variables:**

Firstly, complete the table using the form window and the code of variables declaration:

```
Private Sub Button1_Click (ByVal Sender As
    REM Variables decleragtion
   Dim U_Name As String
   Dim U_B_D As Date
   Dim U_Gender As Boolean
   Dim U_C_F As Integer
End Sub
```



الاسم: ياسمين نادر
تاريخ الميلاد: ٢٠٠٥-١٢-٧
النوع: ○ ذكر ◉ انثى
عدد افراد الأسره: ٥

Control tool	Property	Variable names	Assignment statement
TextBox1	Text	U_Name	U_Name=TextBox1.Text
TextBox2	Text	U_B_D	U_B_D=TextBox2.Text
TextBox3	Text	U_C_F	U_C_F=TextBox3.Text
RadioButton1	Checked	U_Gender	U_Gender = False

CamScanner المسوحة ضوئيا بـ

- **Secondly**, write assigning statements, as the follows:

```
Private Sub Button1_Click (ByVal  Sender  As  system
        Dim U_Name As String ←
        Dim U_B_D As Date                      Variables decleration
        Dim U_Gender As Boolean
        Dim U_C_F As Integer ←
            U_Name = TextBox1.Text ←
                                               Assignment statements
            U_B_D  = TextBox2.Text ←
        If RadioButton1.Checked = True Then
                    U_Gender = True ← Assignment statement
         End If
        If RadioButton1.Checked = False Then
                    U_Gender = False ← Assignment statement
        End If
              U_C_F = TextBox3.Text ← Assignment statement
  End Sub
```

Writing assigning statements

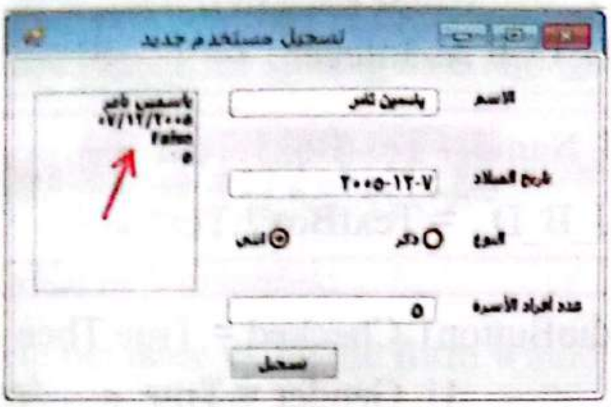
Notice:

- The property (Checked) for control tool (Radiobutton1) has been tested using the conditional statement (if) will be explained later.
- If the value of the property (Checked) is (True) the value "true" is assigned to the variable (U_Gender).
- If the value of the property (Checked) is (False), the value "false" is assigned to the variable (U_Gender).

Exercise

Use of variables:

- To modify the form window in order to display the values of variables in a label as follows:



تسجيل مستخدم جديد

الاسم: ياسمين ثامر

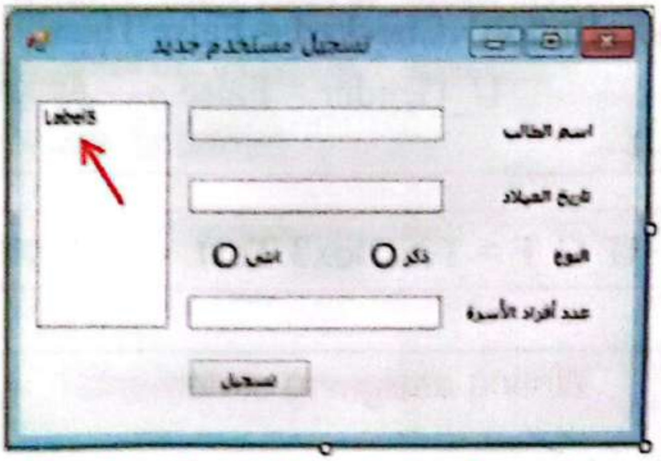
تاريخ الميلاد: ٢٠٠٥-١٢-٧

النوع: ○ ذكر ● انثى

عدد أفراد الأسرة: ٥

ياسمين ثامر
٠٧/١٢/٢٠٠٥
False
٥

(1) Add a control tool "Label5" as follows:



تسجيل مستخدم جديد
Label5
اسم الطالب
تاريخ الميلاد
النوع
ذكر
انثى
عدد أفراد الأسرة
تسجيل

Control tool (Label) after adjusting its properties

(2) Adjust the control properties tool Label 5 as shown in table:

Property	Value
AutoSize	False
Size, Location	Using the mouse pointer – or properties window or code
BorderStyle	FixedSingle

The values of properties of the Label control tool

(3) Open the event procedure by pressing (Double-click) on the "Register" button.

(4) Add the following line of code at the end of the procedure:

```
Private Sub Button1_Click (ByVal Sender As System
   Me.Label5.Text = UserName & vbCrLf & UserBirthDate &_
   vbCrLf & UserGender & vbCrLf & UserNoFamily
  End Sub
```

- The declaration of variables and assigning their values with writing remarks:

```
Private Sub Button1_Click (ByVal Sender As System
REM "الإعلان عن المتغيرات"
  Dim UserName  As String
  Dim UserBirthDate  As Date
  Dim UserGender As Boolean
  Dim UserNoFamily As Integer
REM "تخصيص قيم لهذه المتغيرات"
     UserName = Me.TextBox1.Text
     UserBirthDate = Me.TextBox2.Text
    If RadioButton1.Checked = True Then
           UserGender = True
    Else
           UserGender = False
      End If
   UserNoFamily = Me.TextBox3.Text
' استخدام هذه المتغيرات
Me.Label5.Text = UserName & vbCrLf & UserBirthDate &_
vbCrLf & UserGender & vbCrLf & UserNoFamily
End Sub
```

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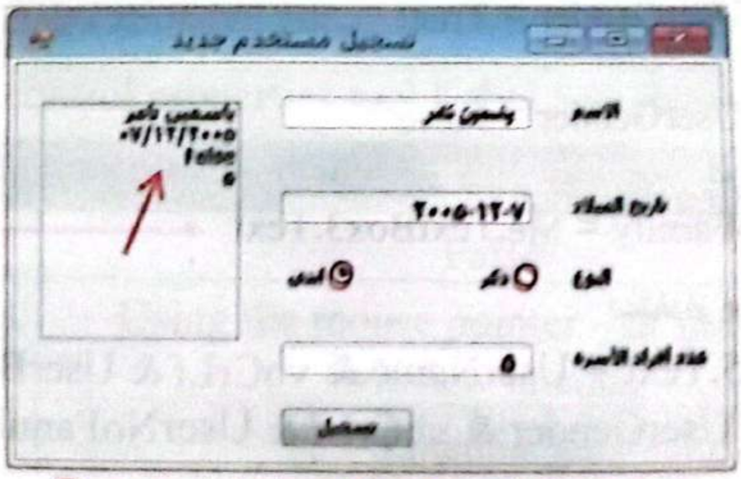
Notice:

- The previous code is an assignment statement for a group of variables with data of controls in "new user registration" form window.

- "**Me**" expresses the current window Form.
- Separates each variable and the other by the concatenation symbol "**&**".
- The reserved word (**vbCrLf**) is used to create a new line.
- Use the symbol (_) to write on more than one line if the code line is too long so you can organize and facilitate the process of reading the (Code).
- The programmer can use the command (**REM**) in writing remarks that can be referred to within the code, it is not compiled.

(5) Run the program by pressing the button (**F5**) to do (**Start Debugging**).

(6) Enter the registration form data, and then press the "**تسجيل**" button, as shown.



الاسم: ياسمين [illegible]
تاريخ الميلاد: ٢٠٠٥-١٢-٧
النوع: ○ ذكر ● انثى
عدد افراد الاسرة: ٥

```
ياسمين [illegible]
٠٧/١٢/٢٠٠٥
false
٥
```

The user interface after completing inputs

Questions ?

★ First: Correct underline in statements:

① Miscellaneous data that do not fall under the Numeric or the character types (such as: Object – Date – **Integer**.

② The values assigned to variables can be value of property or value from **book**.

③ A storage space in the memory of the computer, for the data type (Byte); when used, it occupies (**5 bytes**).

④ **Const** a reserved word in visual basic.net used to create a new line

⑤ Variable, when naming it, you must note that the name begins with a **number**.

⑥ To store numerical values contain fractional use variables of type (**byte**).

⑦ You can use word **REM** to announce the names of the variables in the program.

★ Second: Much from (a) with the suitable in (b):

Column (a)		Column (b)	
1	Byte - Short – Integer - Long	A	Data types for storing decimal values.
2	Declaring Constants	B	Separates each variable and the other
3	(&) Sign	C	Data types for storing integer.
4	Single - Double - Decimal	D	Variable Name or Property = Value
5	Declaring Variables	E	Const Constant Name As Constant Type = Value
6	Assignment Statement	F	Dim Al_Faez As String= "Computer"

CamScanner الممسوحة ضوئيا بـ

★ **Third: State whether the following statements are true (✓) or False (×):**

1. One of the Rules for naming Constants and Variables in the VB.NET is; variable names must begin with a number or underscore (_). ( )
2. The variable Short is used for storing the text data. ( )
3. Allow the variable name has no special symbols. ( )
4. Use the word "Dim" to declare variables and constants. ( )
5. Declaring constants are giving the names of the cells that carry constants values in the computer's memory. ( )
6. Const pi As Single = 22 / 7 ( )
7. The variables of type Single are used to store integers only.( )
8. The Excellent coder is who saves storage space in the computer's memory. ( )

★ **Fourth: Choose the correct answer for the following sentences:**

1. It is stored in Visual Basic.Net and it indicates to the current Form window. (Assignment statement – Byte – REM – Me)
2. Data type take values from zero To 255. (Assignment statement – Byte – REM – Me)
3. It is typed in the start of the line in the Form window for typing a comment or note. (Assignment statement – Byte – REM – Me)
4. It is a statement that consists of two sides (right hand side and left hand side) separated by the assignment operator "=". (Assignment statement – Integer – REM – Me)
5. The data type .... used to do the arithmetic operations. (Char – String – REM – Integer)

Questions from governorates exams ?

★ **First: Complete the following sentences from between the brackets:**

(# # – Dim – >= – & – Const – Long – Me)

❶ .... from the comparison operators and mean greater than or equal.

❷ The value of the variable **Date** is put between .... (كفر الشيخ)

❸ Can use the word .... to announce the names of the constants in the program. (القليوبية)

❹ .... is of the integers. (كفر الشيخ)

❺ The reserved word .... express the current form. (الغربية)

❻ Variables are linked with each other's by .... (دمياط)

★ **Second: In the following code, get the variable names and constants and their Data Types:**

```
Private Sub Button1_Click (Byval sender As Object,
     Dim Radius As Single
     Const pi As Single = 22 / 7
     Radius = TextBox1.Text
     Label2.Text = pi * Radius ^ 2
End Sub
```

★ **Third: State whether the following statements are true (✓) or False (×):**

❶ (Dim) is used for declaring variables and constants. (القاهرة) (   )

❷ (vbcrlf) statement is used for typing comments in the Code window. (الشرقية) (   )

❸ The constant can take the value during declaring it or later. (   )

❹ The value in the assignment statement can be in the form of a property. (   )

❺ (Const) is used for declaring constants (المنوفية) (   )

❻ Is allowed using the apostrophe in the name of the variable. (   )

❼ Const pi As Single. (البحر الأحمر) (   )

Priority rules for Arithmetic operations (Operator Precedence)

- Dear student: We have performed assignment operations including assigning arithmetic expression.

- **For example:** What is the final output of the variable A in the following expression? A = 2 + 3 * 4

- The correct answer is not 20, however (14).
- this is because there are priorities on performing calculations; the multiplication was performed, then addition process after that.

The priorities of performing calculations are:

1	Applying the process inside the brackets from the inside to the outside.	( )
2	Applying the exponent.	^
3	Applying multiplication or division process from left to right, wherever comes first.	* , /
4	The Application of the addition or subtraction process from left to right, wherever comes first.	+ , -

Examples:

(1) What is the final output of the variable **C** in the following expression? **C = 2 + 3 * 4**

Steps of Solution

C = 2 + 3 * 4

First step 3*4=12

Second step 2+12

Final output C = 14

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(2) What is the final output of the variables in the following expressions?

Steps of Solution

	A = 5 + 3 * 2
1	3 * 2 = 6
2	5 + 6 = 11
3	A = 11

	B = (5 + 3) * 2
1	5 + 3 = 8
2	8 * 2 = 16
3	B = 16

Errors

- On writing a code, it is a must to abide by the rules of the programming language used.
- When you write the code, in order to avoid errors that may cause the following:

(1) The error messages on writing a code or not executing of commands.

(2) Getting the wrong results. (3) The program does not run.

There are three types of errors

(1) Syntax Errors. (2) Logic Errors. (3) Runtime Errors.

1 Syntax Errors

- They are errors in the common syntax commands of the language.

Example (1)

```
Din  X  As  Single
```

- The variable (X) was declared but there is a mistake in writing the word (Dim).

Example (2)

```
Const  pi  As  Single
```

- The constant (X) was declared but, its value is not assigned during the declaration.
- This type of error is easy to detect because the (IDE) helps us as it does not allow any error of this type which displays the syntax of any command as you type it.

2 Logic Errors

- Logic Error: it happens when we get incorrect results after executing the program because of the wrong formulating arithmetic or logic expressions.

Example:

- On calculating the area of a circle, we use the following code:

```
Dim Radius As Single
Const  X  As Single = 22 / 7
        Radius = TextBox1. Text
        Label2. Text = X  +  Radius ^ 2
```

Note:

- On running the program, it will not give any error messages, it will give the wrong result, because we used sign (+) instead of an asterisk (*).
- To overcome this type of error, you must review the written code, and test the program with data already validated, to be sure there are no errors of this type (Logic Error).

3 Runtime Errors

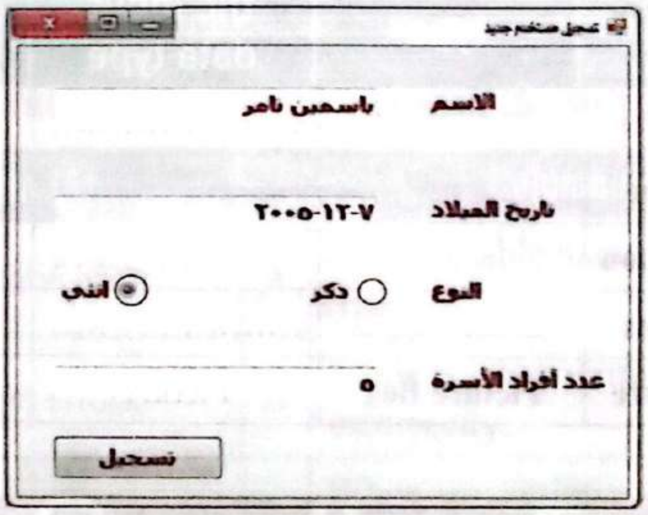
- These errors are discovered while running the program.

Example:

- When declaring a variable of type Byte and during the program running, a value that is less than or greater than the allowable range is given, i.e. less than (0) or greater than (255) so an error appears during the run, meaning that the value is out of range.

Training (1)

- Discuss with your colleagues and under the supervision of your teacher the next screen content, and the table:



تسجيل مستخدم جديد

الاسم ياسمين تامر

تاريخ الميلاد ٢٠٠٥-١٢-٧

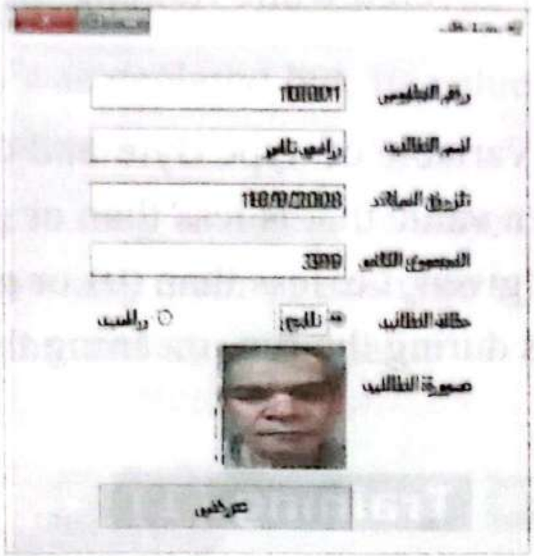
النوع ○ ذكر ● انثى

عدد أفراد الأسرة ٥

The statement Name	Control tool type	It is used in the input data type	The value of the data entered
Name	TextBox	Character	ياسمين تامر
Data of birth	TextBox	Date	7 / 12 / 2005
Number of family member	TextBox	Numeric	5
gender	RadioButton	Logic (Boolean)	femal

Training (2)

- Complete the table with the assistance of the following screen:



رقم الجلوس 1010001

اسم الطالب راضي تامر

تاريخ الميلاد 11/10/2008

المجموع الكلي 3990

حالة الطالب ● ناجح ○ راسب

صورة الطالب

The statement Name	Control tool type	It is used in the input data type	The value of the data entered
Sitting number	....	....	....
Student name	....	....	....
Total summation	....	....	....
Student status	....	....	....
Student picture	**Picture Box**	**Picture**	**Photo file**

Questions ?

★ **First: State whether the following statements are true (✓) or false (×):**

❶ The arithmetic operations between the brackets precede all the operations. ( )

❷ Upon executing the assignment code (**Y = 3 + 2 * 5 - 1**), (Y) value will be (24). ( )

③ The logical errors result in incorrect results when using the program. ( )

④ When declaring a constant without giving it a value, syntax error occurs. ( )

⑤ When using an incorrect arithmetic equation in the assignment statement, runtime error occurs. ( )

⑥ **A2016** is a correct variable name. ( )

⑦ Variables of types (Integer , Single , Double) are used to store integers only. ( )

⑧ The data type (String) used to do the arithmetic operations.( )

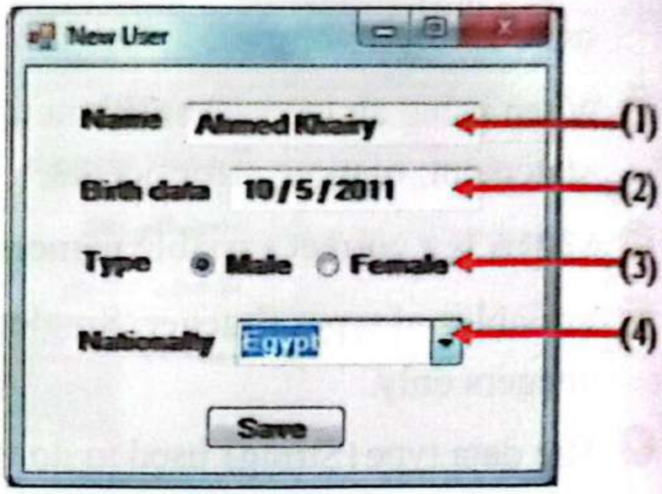
⑨ Const B_day As Date = 20/10/2005 ( )

⑩ You can use word Const to announce the names of the constants in the VB.NET. ( )

★ Second: Much from column (A) with the suitable in (B):

Column (A)		Column (B)	
1	Runtime error	A	Dim Variable name As Variable type
2	Logic errors	B	happens when writing code incorrectly.
3	Declaring Variables	C	When you assign a value greater than or less than the Date type used
4	Assignment statement	D	happens if the expressions used in the assignment statement are built improperly, it leads to incorrect results.
5	Syntax errors	E	Variable name or Property = Value

★ **Third: In the following Form window, if it is required to store entries from the user in variables. Define the corresponding Data Type for each input.**



Name: Ahmed Khairy (1)

Birth data: 10/5/2011 (2)

Type: ● Male ○ Female (3)

Nationality: Egypt (4)

❶ ....

❷ ....

❸ ....

❹ ....

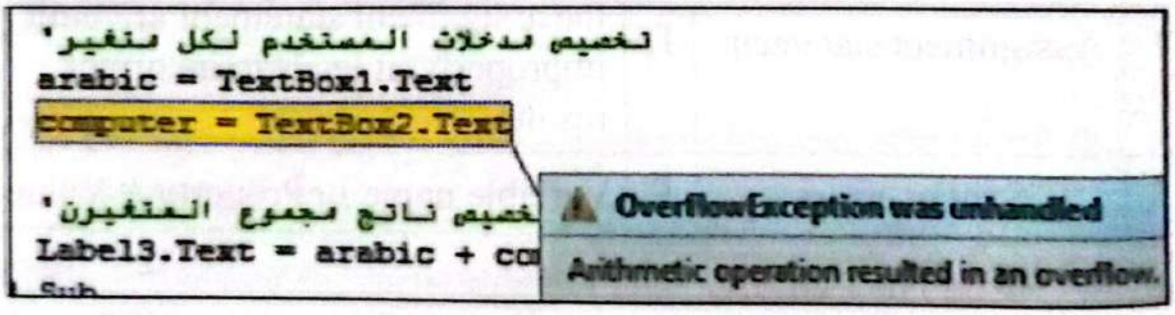
★ **Fourth: In the following code, get the variable names and constants and their Data Types:**

```
Private Sub Button1_Click (Byval sender As Object,
    Dim Radius As Single
    Const pi As Single = 22 / 7
    Radius = TextBox1.Text
    Label2.Text = pi * Radius ^ 2
End Sub
```

- ....

- ....

★ **Fifth: In the following message, determine the cause of the displayed error.**



```
'تخصيص مدخلات المستخدم لكل متغير
arabic = TextBox1.Text
computer = TextBox2.Text

'خصيص ناتج مجموع المتغيرين
Label3.Text = arabic + co
Sub
```

OverflowException was unhandled

Arithmetic operation resulted in an overflow.

- The cause of error: ....

CamScanner الممسوحة ضوئيا بـ

★ **Sixth: Determine the type of error in the following, and then perform the required error handling.**

	Code	Error	Error handling
1	Din X As Single	....	....
2	Const X As Single	....	....

★ **Seventh: Evaluate the following Arithmetic expressions and get the results.**

❶ **(5 + 3) * 2** ....

❷ **5 + 3 * 2** ....

★ **Eight: Write the necessary code for each case:**

❶ To declare the production date (P_Date) as constant of a suitable date type, its value is "14/5/2016".

❷ To declare the number of students in school (St_Number) as a variable of a suitable data type.

❸ To assign the value which will be entered in the Textbox1 control to the variable (N).

❹ To declare the (u_name) as variable of a suitable date type.

★ **Ninth: Write the order of execution of Arithmetic operations that follow.**

Operation	Order
Applying multiplication or division process from left to right, wherever comes first.	( )
Parentheses from the inside to out.	( )
The Application of the addition or subtraction process from left to right, wherever comes first.	( )
Applying the exponent.	( )

General questions for the chapter

★ **First: Give the suitable term to the following sentences:**

1. They are places received in the "RAM" and, have data type, assigning values depending on their data types, these values cannot be changed during the program execution.
2. It means the errors which occur when typing the codes incorrectly in the code window as "characters errors".
3. A window where the event handler are typed.
4. A guiding word for creating a new line.
5. The reserved word express the current form.

★ **Second: Choose the correct answer:**

1. You can use word ………………… to announce the names of the Constants in the program. (Me – Dim – Const – Byte)
2. Declaring variable is done using the ………… statement. (Object – Me – Dim – Byte)
3. When executing the following code: **Dim X As integer = 3/2**, **X** value is: (2,5 – 1 – 1,5 – 0,05)
4. Data Type ………… which receives values starting from **"0"** and ends with **"255"**. (Me – Object – Dim – Byte)
5. To store logical value, use the data type: (Boolean – Object – Byte)

★ **Third: Give the suitable code for the following :**

1. Declaring a variable name "BD" for storing the date "1/1/2010".
2. Declaring a decimal constant "A1" for storing the value 85,50.
3. Declaring a constant name " D" for storing the value 32000.
4. Declaring a variable name "U_Name" for storing characters.

★ Fourth: State whether the following statements are true (✓) or false (×):

1. Failure to follow the rules of naming variables and constants does not result in any error in the rules. ( )
2. Const Al_Faez As string ( )
3. To type comments in the code window, use "REM". ( )
4. Variable were announced using command (Dim). ( )
5. Declaring variables mean to give names to the calls which have constant values. ( )
6. We can declaring a constant without giving it a value. ( )
7. The properties are given values through the code window only. ( )
8. When declaring a variable in a certain procedure, this variable can be used in the same procedure only. ( )

★ Fifth: Complete the following sentences from between the brackets :

(Syntax Error – Declaring Variable – REM – 2 – Logical Error – Assignment – Constants – 3 – String – Char – Variable – Single)

1. …….. is a word used for typing a comment in the Code window.
2. …..…… code is used for storing values in the computer memory.
3. When declaring a constant without giving it a value a …… occurs.
4. After executing the assignment code: Deg = 18 / (3 + 3 * 2), Deg value is …………….. .
5. When using an incorrect arithmetic operation in the assignment statement a ………. occurs.
6. The data type ………. is used for storing character values.
7. Stored locations in the computer memory "RAM" and it has data type. Its value can't change during the program execution.
8. Dim Variable Name As Variable Type.

Questions from governorates exams

★ **First: Give the suitable term to the following sentences:**

❶ A code for defining the constant name, type and value. (البحر الاحمر)

❷ Type of the variable which takes the value "True" or "False".

❸ They are the errors that occur as a result of the user entering incorrect values during the program runtime. (الاسكندرية)

❹ A code used for storing a value in a certain location in the computer memory. (كفر الشيخ)

❺ The procedure which is used when a certain event occurs. (أسيوط)

❻ The word is used to announce the names of the constants in the program. (المنوفية)

★ **Second: What is the result of executing the following code:**

❶
```
Dim N1  As byte = 3
Dim N2  As Byte = 2
Dim N3  As Byte = 5
```

[A] N2 ^ 2 * N3

[B] N1 * (N2 + 3)

❷
```
Dim U_B  As  String
    TextBox2. Text = "I like"
    U_B = TextBox2. Text & "  " & "Egypt"
```

★ **Third: Choose the result of executing each of the following:**

❶ (3 + 2 ^ 2) * 2 [12 – 22 – 14 – 25] (الاسماعيلية)

❷ 7 + 3 - 2 * 2 [25 – 6 – 24 – 25] (الاسكندرية)

❸ 10 + 3 * 5 [18 – 25 – 9 – 15] (بور سعيد)

❹ 6 * (2 + 4) [30 – 33 – 21 – 36] (الغربية)

❺ 2 ^ 3 + (23 + 2) / 5 [30 – 13 – 21 – 36] (الدقهلية)

CamScanner الممسوحة ضوئيا بـ

School Questions ?

★ **First: Put a tick (✓) in front of the corect statement and a cross (×) in front of the wrong statement for each of the following sentences: :**

(1) One of the advantages of VB.NET is deal with different types of data. ( )

(2) One of disadvantages of VB.NET is dealing with different types of data. ( )

(3) All the data entered into the VB.NET program language are stored temporarily in the computer memory. ( )

(4) All types of data saved in memory occupy the same storage space. ( )

(5) A good programmer is the one who improves the rationalization of storage space in the computer memory. ( )

(6) The value of the student's total grades is Classified within the integer data types. ( )

(7) The value of the student's name is Classified in the **Miscellaneous** Data types. ( )

(8) The value of the student gender "male" or "female" is Classified within the **Miscellaneous** data types "**Boolean**". ( )

(9) Image of a student can be classified within the character data types. ( )

(10) The value of the employee's salary can be classified within non-Integer numeric data types. ( )

(11) Each data element stored in the computer memory occupies particular storage space and a particular rang of values a ccording to its data type. ( )

(12) The data element identifies the storage space it occupies in computer memory and knowing the minimum and the maximum for its value. ( )

CamScanner الممسوحة ضوئيا بـ

(13) The term variables in VB.NET means stores in the computer Memory, which has type and name. ( )

(14) Declaring a variable in VB.NET means determining its name and data type. ( )

(15) The declaring of variables in the language VB.NET, helps rationalize the use of the computer memory. ( )

(16) Declaring of variables is a matter of formality, because VB.NET language recognize the variables and determine the types automatically. ( )

(17) The following statement: **Dim F_name As String** is to declaring the name of a variable **"String"** and type **"F_name"**. ( )

(18) The following data element: **"Dim F_name As String"** is to declaring the name of a variable **"F_name"** and type **"String"**. ( )

(19) The declaration statement for variables is determined by the variable name and type . ( )

(20) The declaration statement for the variables is determined by the name, type and fixed value. ( )

(21) **"55City"** variable name ia a considered a wrong variable name because it begins with a number. ( )

(22) **"55City"** is considered a variable correct name. ( )

(23) **"Name"** is considered a correct variable name in event procedure level (**enrichment**). ( )

(24) **"Name"** is considered a correct variable name in form1 class level (**enrichment**). ( )

(25) **"Dim"** is used to declare variables. ( )

(26) **"Dim"** is used to declare constants. ( )

(27) The command **"Const"** is used in declaration of the variables. ( )

(28) The command **"Const"** is used in the declaration of the constants. ( )

CamScanner الممسوحة ضوئيا بـ

(29) Constants in VB.NET language are stores of a computer memory which have the name and value that does not change during the running of the program. ( )

(30) Constants in VB.NET language are stores of a computer memory which have the name and value can change during the running of the program. ( )

(31) The error in the result of any equation is a syntax error. ( )

(32) The error in the result of any equation is a logical error. ( )

(33) Error that appears while you run or execution of VB.NET program is called Syntax error. ( )

(34) Error that appears during the execution of VB.NET program is Run time error. ( )

(35) The final value of the variable **X** after the execution the following equation **"X = 3 + 2 * 4"** is **(11)**. ( )

(36) The final value of the variable **X** after the execution the following equation **"X = 3 + 2 * 4"** is **(20)**. ( )

★ Second: Select the appropriate answer to complete each of the following sentences:

(1) The value of prices of desktop tools can be classified as .. data.

A) Integer.

B) Non-Integer.

C) Miscellaneous.

(2) The value of the names of the subjects can be classified as ... data.

A) Miscellaneous.

B) Non-Integer. C) String.

(3) The type of data element temporarily stored in the computer memory defines ……………

A) Storage space and the extent of its value.

B) Name and a storage space.

C) Storage space and storage value.

(4) The right syntax to declare Salary variable is …………..

A) Dim Salary As Integer

B) Dim Salary As Byte

C) Dim Salary As Decimal

(5) The right syntax to declare the City variable is ……….

A) Dim City As String

B) Dim City As Byte

C) Dim City As Decimal

(6) The right syntax to declare the variable name (F_Name) is ….

A) Dim F_Name As Integer

B) Dim F_Name As String

C) Dim F_Name As Decimal

(7) The right syntax to declare the variable Gender is ………..

A) Dim Gender As Decimal

B) Dim Gender As Integer

C) Dim Gender As Boolean

(8) The right syntax to declare the variable name (F_Name) is ….

A) Din F_Name As String

B) Dim F_Name As String

C) Dim F_Name As Char

(9) Error that appears after running a program VB.NET language is called ………….

A) Syntax Error

B) Logical Error

C) Run time Error

(10) Error that appears while writing a code in a VB.NET language called:

A) Syntax Error

B) Logical Error

C) Run time Error

(11) The error in the output result in language VB.NET code is called ………….

A) Syntax Error B) Logical Error C) Run time Error

(12) The final output of the variable X for equation "X= 3+2*4" is …………

A) 11 B) 24 C) 20

(13) The final output of the variable Y for the equation "Y = 16 - 12/4 + 2" is ……..

A) 3 B) 11 C) 15

(14) The declaration statement of a variable "Dim X As String", means the declaration about …..

A) A variable named X and type of character String.

B) Variable called string and its type X.

C) Unknown variable has no name and its type String.

(15) The correct statement to declare a non-integer variable named Y is ….. .

A) Dim Y As Decimal

B) Y As Decimal

C) Dim Y = Decimal

(16) Choose the correct name of the variable "name of the student":

A) st_name

B) name

C) Name**

(17) Choose the correct name of the variable "address of the employee":

A) 5Cairo

B) E_Address

C) (Address)

(18) The names of the following variables are correct in level of class form1 except: (enrichment).

A) St_text

B) Text

C) _st_text

(19) On declaration of a mathematical constant π , we use the code ..

A) Dim Pi As Single

B) Dim Pi As Single = 3.14

C) Const Pi As Single = 3.14

(20) On the declaration of constant gravity acceleration, we use the code ......

A) Dim g As Single

B) Const g As Single = 9.81

C) Dim g As Single = 9.81

(21) The declaration of variable number of family members C_Family with initial value of 2 is ....

A) Dim C_Family As Single = 2

B) Const C_Family As Integer = 2

C) Dim C_Family As Integer = 2

(22) If there is an error in the result of a rectangular area calculation in a program, this error is considered .... .

A) Syntax Error

B) Logical Error

C) Run time Error

(23) The error message that appears when you write the code "Dimension X As Byte", can be classified as .....

A) Syntax Error

B) Logical Error

C) Run time Error

(24) The final output of the equation "Y = 12 – 2 + 4 / 2" is ......

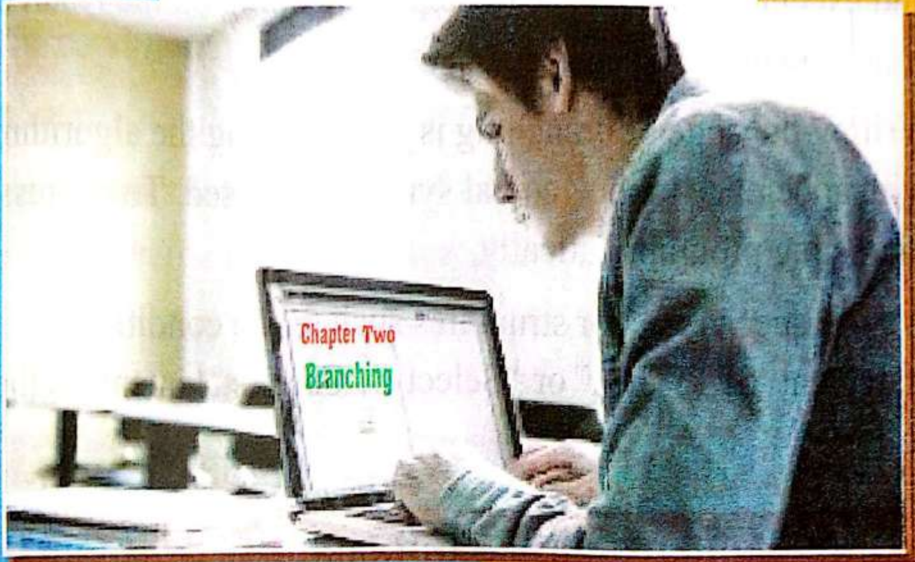
A) 12 B) 7 C) 9

(25) The final output of the equation "Y = 12 – (2 + 4) / 2" is ...

A) 12 B) 7 C) 9

Chapter Two

Branching



★ By the end of this chapter, you will be able to:

- Identify conditional Statement "If ... Then".
- Use "If ... Then . Statement.
- Use "if...then ... else" statement.
- Use "Select... Case" Statement.

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Branching

★ **PREFACE:**

★ We previously learned Flowcharts; where we need branching and executing a sequence of steps depending on the result of condition or the answer to a question..

★ Writing the code of branching is just applying the algorithm with adherence to the general syntax rules used. To express branching programmatically.

★ We use special data or structures such as the conditional statement "IF .. Then" or "Select … Case" statement, as the follows.

Branching using the statement (IF...Then)

- The statement "IF…Then" uses if we had only one choice is executed when the condition is true.

The general syntax

① **IF (Conditional Expression) Then**

② **Code**

(The code in case of True).

③ **End iF**

① The statement (If…Then) consists of the "If" and (condition Expression) and the word "Then" together in the same line.

② If the result of the condition is true, the code after "Then" will be executed sequentially until "End iF".

③ The statements (If…Then) ends with an order "End iF".

Note:

- If the result of condition is "False", the code following "End iF" will be executed if there while the commands after "Then" will be ignored.

Conditional Expressions

- The conditional expression consists of three parts as follows:

(1) Comparison operator such as " = , < , >= , <> " preceded by:

(2) An abstract value, a value of a variable or constant or a result of a mathematical expression that is compared with an abstract value ,a value of a variable or constant or a result of a mathematical expression.

Note:

- If this condition is met, it means that the result of the conditional expression is "True" and a specific code is executed.
- If the condition isn't met, it means that the result of the conditional expression is "False" and another code is executed.

Example (1) Conditional expression: **IF A > 5**

	(2) Variable or Constant	(1) Comparison operator	(3) Abstract value
IF	**A**	**>**	**5**

- In the above example, the conditional expression consists of right hand side and left hand side separated by the comparison operator (greater than ">").

- Therefor the result of conditional expression either "True" if the value of "**A**" greater than "**5**", or "False" if the value of "**A**" less than "**5**".

Example (2) Conditional expression: **IF B <= A**

	Variable or Constant	Comparison operator	Value of the variable or constant
IF	B	<=	A

- Note: The result of conditional will be "True" if the value of "B" is less than or equal to "A", and will be "False" if the value of "B" is greeter than "A".

Example (3) Conditional expression: **IF C = A – 3 * 2**

	Variable or Constant	Comparison operator	The output of the arithmetic expression
IF	C	=	A – 3 * 2

- The result of conditional will be "True" if the value of "C" is equal to (A – 3 * 2).
- The result of conditional will be "False" if the value of "C" is not equal to (A – 3 * 2).

- The following table illustrates some examples:

Example of conditional expression	Conditional Expression		
	After comparison operator	There are (6) comparison expression	Before comparison operator
If A > 5	Abstracted value	Greater than >	Variable Or Constant
If A < 5		less than <	
If 5 <> A		Not equal <>	
If B <= A	Variable	Less than Or equal <=	
If B >= A		Greater than Or equal >=	
If B = A + 3* 2	A value from expression	Equal to =	
If C <> A - 3*2			
If A^2 = B / C			

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*** There are (6) comparison operator:**

Operator	The meaning
<	Less than
<=	Smaller than or equal
=	Equal

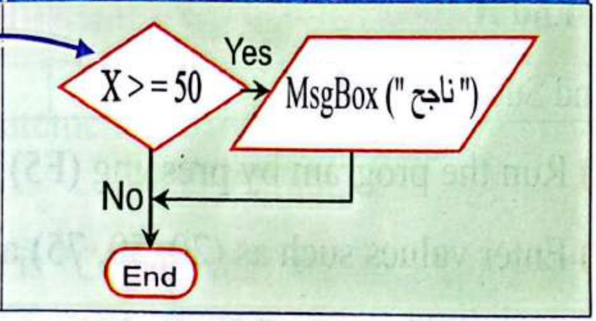
Operator	The meaning
>	Greater than
>=	Greater than or equal
<>	Not equal

*** Example:** Flowchart to print the word "ناجح" if the degree is greater than or equal to 50:

Code

```
If X >= 50  Then
  MsgBox( "ناجح" )
End If
```

Flowchart

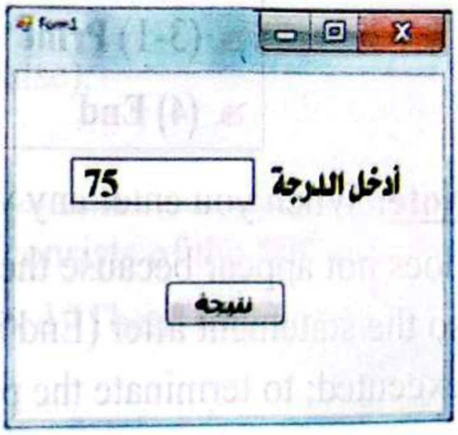


Illustrates the code of "If .. then" Equivalent

Exercise

- Implement the following steps to create a program in which we enter student's score, then the message "successful" appears in the message box, if the score is greater than or equal to 50, when you click the button "Result".

(1) Design the following form window as shown.



أدخل الدرجة 75

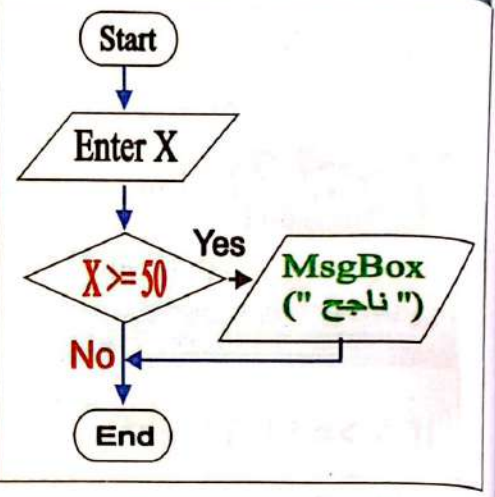
(2) Write down the following code guided by the flowchart:

- The "**Code**" is written in the event procedure "**Click**" for the command button "**Button1**".

Code

```
Private Sub Button1_Click
  Dim X As Single
      X = Me.Textbox1. Text
   If  X >= 50  Then
      MsgBox( "ناجح")
   End If
End Sub
```

Flowchart



(3) Run the program by pressing (F5).

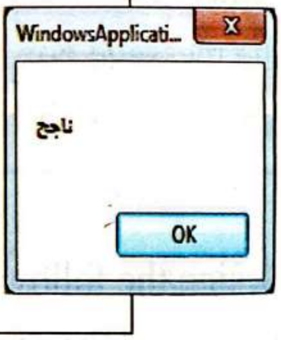
(4) Enter values such as (20, 50, 75) and click the button (نتيجة) in each time.

✶ Notice:

- We can also use the following (Algorithm) in typing program code:

Algorithm

```
(1) Start
(2) Enter the degree X
(3) If  X >= 50  then
(3-1) Print "ناجح"
(4) End
```



ناجح

- **Note:** When you enter any value less than 50, the MessageBox does not appear because the result of the condition is (False), so the statement after (End if) which is (End Sub) will be executed; to terminate the procedure.

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- **We can written "If" statement, in one line without writing "End if" as follows:**

```
Private Sub Button1_Click (ByVal  send
    Dim X As Single
     X = Me.Textbox1. Text
 If  X >= 50  Then  MsgBox (" ناجح ")
End Sub
```

The (If) statement in one line

Branching statement using (IF ..Then .. Else)

- The (**If .. Then .. Else**) statement is used when there are two alternatives.
- This syntax is used if there is "Code1" that will be executed if the result of condition is "true", or another code "Code 2" is executed if the result of condition is "False".

The syntax of (If .. Then .. Else) statement

① IF (Conditional Expression) **Then**

② **Code1**

(The code in case of True).

③ **Else**

④ **Code2**

(The code in case of False).

⑤ **End IF**

① The statement (If .. Then .. Else) consists of the "If" and (condition Expression) and the word "Then" together in the same line.

❷ If the result of condition is **(true)**, the statements after **(Then)** will be executed sequentially until **(Else)** while the statements after **(Else)** will be ignored and the code after **(End If)** will be executed, if there.

❸ The word **Else** in one line.

❹ If the result of condition is **(false)**, the code following **(Else)** will be executed sequentially until **(End iF)** while the code after **(Then)** will be ignored and the code after**(End If)** will be executed, if there.

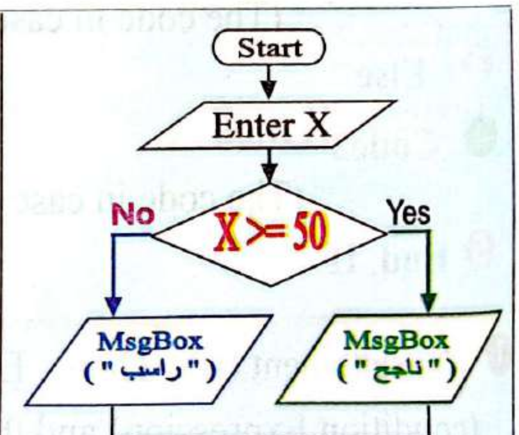
❺ The statements (If .. Then .. Else) ends with "End iF".

Exercise

- Modify the previous code to display the word "راسب" in a MessageBox; if the degree is less than 50 as shown in the following table:

- The (Code) is typed in the "Click" event procedure for the command button (Button1).

```
Dim X As Single
X = Me.Textbox1.Text
If X >= 50 Then
     MsgBox( "ناجح")
 Else
     MsgBox( "راسب")
End if
End Sub
```



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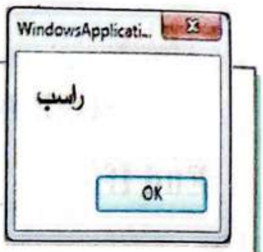
Note:

- An (Else) statement contains the block of code (statements that follow Else) which is executed if the result of the conditional expression in the (If) statement is (False).

* **The (If) statement can be written, in one line without writing (End if) as follows:**



راسب

```
Private Sub Button1_Click (ByVal  send
    Dim X As Single
     X = Me.Textbox1. Text
IF X >= 50 Then MsgBox("ناجح") Else MsgBox("راسب")
    End if
```

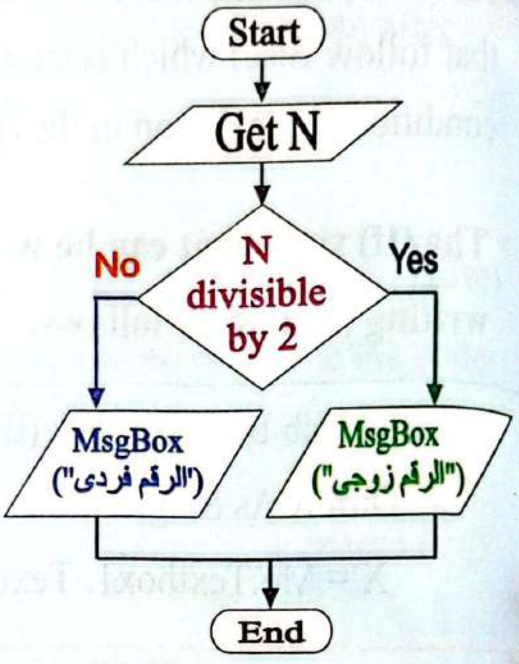
The (If) statement in one line

Exercise

- In the same way as previously mentioned; create a new project that receive a value stored in the variable (N) through a TextBox, and displays the message "الرقم زوجى" or "الرقم فردى" in a MessageBox.

* **Note:**

- The (Code) is written in the "(Click) event procedure" for the command Button.

Code	Flowchart
See code below	

Code

```
Dim N As Long
 N = Me. Textbox1. Text

If N Mod 2 = 0 Then
      MsgBox(“الرقم زوجى”)
  Else
      MsgBox(“الرقم فردى”)
End If

End Sub
```

Flowchart

* **Notice:**

- We assigned the value in text box to the variable (N).
- The value of the variable (N) was tested, if it is divisible by 2 without a remainder through the conditional expression (N Mod 2) = 0.
- The function (Mod) returns the remainder of dividing the variable (N) by 2.
- If the remainder of the division is equal to zero, this means the condition is (True), then a message "even number" appears in a message box.
- And if the remainder of the division is not equal to zero, this means that the condition is not met (False), and a message "odd number" appears in the message box.

Questions ?

★ **First: After execute the following code, choose the correct answer for each of the following:**

```
Dim Age , Mark , Total As Single
        Age = 25,3
        Mark = 100
    If Age < 30  Then
        Age = 15,5
        Mark = 70
    End If
        Total = Mark * 2
```

❶ The value of the variable **Age** is equal to ………………………… .

❷ The value of the variable **Mark** is equal to ……………………… .

❸ The value of the variable **Total** is equal to ……………………… .

★ **Second: Write the scientific term:**

❶ A conditional statement used to execute one of two options according to the result.

❷ A comparison operator mean greater than or equal.

❸ It is a part of the programming code and its result is "True/ False".

❹ A function used to computes the remainder of the division operation.

❺ A statement used to execute only one option if the result is "True".

★ **Third: State whether the following statements are true (✓) or false (×):**

❶ The result of (80 <= 60) conditional expression is False. (   )

❷ The operator "<>" is of the comparison operators. (   )

❸ The result of the conditional expression (12 Mod 6 = 2) is True. (   )

❹ In If conditional statement when the condition is False, the codes following Else will be executed. (   )

Questions from governorates exams

★ **First: Choose the correct answer from between the brackets:**

① Ending statement (If … Then) with:
(End If – End Then – End Else) (المنوفية)

② The conditional expression (42 Mod 8), its result:
(2 – 5 – 5,5) (المنوفية)

③ We use the ……. operators in typing the conditional expressions in Visual Basic.NET. (Logical – Comparison – Runtime) (بنى سويف)

④ The code ………. is used when there are two at alternatives (A) and (B). (Boolean – If … Then – If … Then … Else) (الاسكندرية)

⑤ If the value of variable (X = 60) and value of variable (Y = 45) then the result of the conditional expression (X <= Y) is:
(Null – False – True) (المنوفية)

★ **Second: After reading the following code state whether the statements are true (✓) or false (x):** (كفر الشيخ)

```
Dim Computer , English , Total , Avg  As  Integer
        Computer = 40  ,  English = 20
    If ( Computer > 30 ) Then
        Total = Computer + English
        Avg = Total / 2
    Else
        Computer = 30   ,    English = 26
        Total = Computer + English
        Avg = Total / 2
    End If
```

① The value of variable Computer equal to 40. (   )

② The value of variable English equal to 30. (   )

③ The result of the conditional expression (Computer > 30) is true.

④ The value of variable Total equal to 56. (   )

⑤ The value of variable Avg equal to 28. (   )

Sample Test 1 March

*** First: Give the suitable term to the following sentences:**

❶ It is used to link text values.

❷ To add a comment or note in the Code window.

❸ Is used to create a new line in the Code window.

❹ The reserved word express the current "Form".

❺ The variable is used for storing the text data.

*** Second: After reading the following code state whether the statement are true (✓) or false (x):**

```
Dim A  As  byte = 10 ,  B  As  byte = 8
Dim Total , Average  As  Byte
    IF A <> 10 Then
            Total = A + B
            Average = (A + B)/2
    Else
        A = A * 5
        B = B * 5
        Total = A + B
        Average = (A + B) /2
    End If
```

❶ The value of the variable "**B**" is equal to **40**. (   )

❷ The value of the variable "**A**" is equal to **8**. (   )

❸ The value of the variable "**Total**" is equal to **18**. (   )

❹ The value of the variable "**Average**" is equal to **45**. (   )

*** Third: Choose the correct answer:**

❶ Use the word (Const – Me – REM – Dim) to declare variables, and the word …….. to declare constants.

(Const – Me – REM – Dim)

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❷ When (A = 20) , (B = 40) , the result of the conditional expression (A <= B) will be ....

(Const – Dim – True – Me)

❸ In the conditional expression (Degree >= 50) the variable is (50 – Dim – Degree – &) and the value is ....

(50 – Dim – Degree – &)

❹ To copy the contents of "TextBox2" and display them in "TextBox1", the code should be .... .Text = ...Text

(TextBox1 / TextBox2 – TextBox2 / TextBox1 – Me / Form1)

❺ In **if** conditional statement when the condition is .... , the codes following **Then** will be executed.

(Dim – True – Me – False)

* Fourth: State whether the following statements are true (✓) or false (x):

❶ We can use (Me – Decimal – Integer) as variable names. ( )

❷ The operator "<>" is of the Comparison factors. ( )

❸ When typing If conditional statement in one line, we will need to type End if. ( )

❹ The result of (50 <= 35) conditional expression is True. ( )

❺ Properties of control tools are locations for storing data. ( )

* Fifth: Put each word in the right place:

[Dim – less than or equal to – 17 – Rem]

❶ Declaration of the variable name begins with the reserved word ...

❷ Upon executing the assignment code (X = 2+3*5), "X" value will be ....

❸ To add a comment or note in the Code window, type .... at the beginning of the line.

❹ The symbol <= called ....

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Sample Test 2 March

* **First**: **Choose the result of executing each of the following code:**

❶
```
Dim m  As  byte = 10
      IF m = 10 Then
            MsgBox (“Pass”)
      Else
            MsgBox (“Fail”)
      End if
```

(Pass – False – True – 20)

❷
```
Dim strName  As  String = “Al Faez”
      strName = “ ” & strName
      strName = strName & “  ” & “is my favorite book”
 Label3. Text = strName
```

(is my favorite book – Al Faez – Al Faez is my favorite book)

❸
```
Dim A  As  Integer = 20
      IF ( A Mod 5 ) = 0  Then
            Label2. Text = “True”
      Else
            Label2. Text = “False”
      End if
```

(False – True – 20 – Mod)

* **Second**: **State whether the following statements are true (✓) or false (×):**

❶ Variables of types Integer are used to store integers only. (   )

❷ Using “>=” sign means the inequality. (   )

❸ Byte is a suitable variable name. (   )

❹ The “Boolean” type is used for storing logical values. (   )

❺ The data type “String” is used for storing logical values. (   )

❻ The result of the conditional (8 Mod 4) = 0 is True. (   )

* Third: Choose the result of executing each of the following:

① (3 + 3 ^ 2) * 2 [12 – 22 – 24 – 25]

② 7 + 3 ^ 2 * 2 [25 – 23 – 24 – 25]

③ 10 + 3 * 5 [18 – 25 – 9 – 15]

④ 3 * (2 + 10) [30 – 33 – 21 – 36]

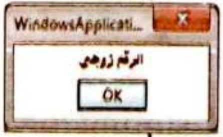
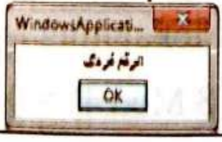
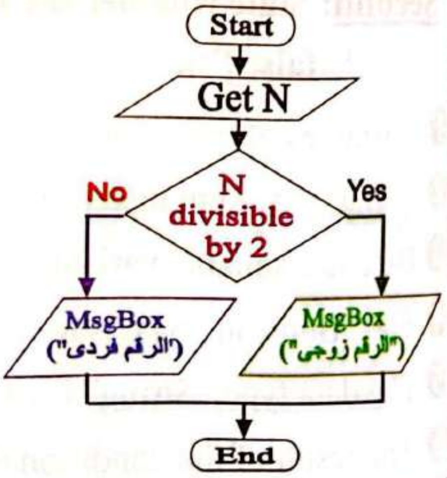
⑤ 3 ^ 2 + 4 * 3 [21 – 23 – 29 – 25]

⑥ 5 - 3 * 5 / 1 [-10 – 5 – 10 – 20]

* Fourth: Choose from column (a) with appropriate column (b):

	Column (A)		Column (B)
1	The symbol = called	A	Is less than or equal.
2	The symbol <> called	B	Is greater than or equal.
3	The symbol > called	C	Is not Equal.
4	The symbol >= called	D	Equals.
5	The symbol < called	E	Is greater than.
6	The symbol <= called	F	Is less than.

* Fifth: Complete the code in the left side of the table below depending on the Flowchart in the right side that receives values in the variable "N" through a textbox, and displays the message box "رقم فردى" or "رقم زوجى".

Code	Flowchart
.... N As Single .... = Me.Textbox1.Text .... (N Mod 2) = 0 .... MsgBox("الرقم زوجى")  WindowsApplicati... الرقم زوجى OK .... MsgBox("الرقم فردى")  WindowsApplicati... الرقم فردى OK	 Start Get N No N divisible by 2 Yes MsgBox ("الرقم فردى") MsgBox ("الرقم زوجى") End

Branching using (Select ... Case)

- "Select ... Case" statement is used in Branching depends only on the value of one variable and there are many conditions.
- Branching using (Select .. Case) reduces the code and makes it easier and clearer.

The syntax of (Select .. Case) statement

```
Select ... Case Variable
❶      Case value1    ' The variable's first value.
   Code 1    The statements that are executed if the value
             of the variable equal to the value1 .
❷      Case value2    ' The variable's second value.
   Code 2    The statements that are executed if the value
             of the variable equal to the value2 .
❸      Case value3    ' The variable's third value.
   Code 3    The statements that are executed if the value
             of the variable equal to the value3 .
❹      ------------------
       ------------------
      Case Else
   Code      The statements that are executed if the value
             of the variable not equal to all previous values.
End Select
```

★ The (Select … Case) statement consists of (Select … Case) and a variable in one line.

❶ This line contains (Case), means the variable and then condition.

- **Code1 :** This line contains code are executed if result of the first case is (True).

★ (Case Else) is written on a single line. Then code if it is not variable values equal to all previous values.

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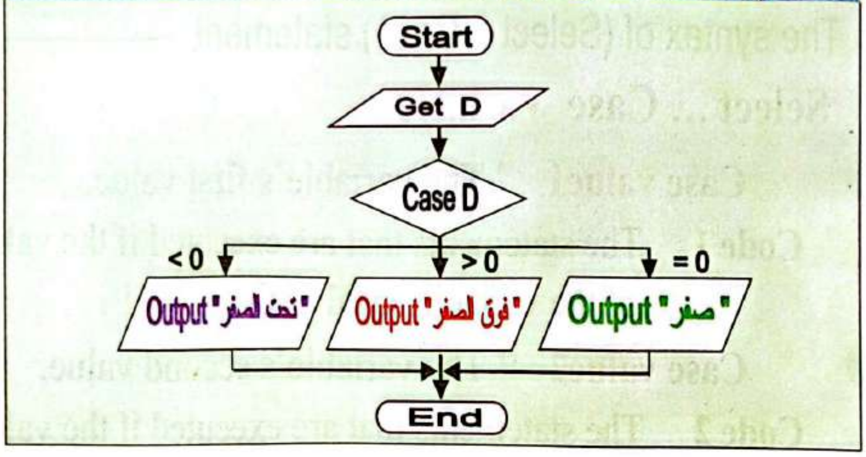
Exercise

- On entering the temperature through the TextBox (TextBox1) and then clicking the "test" button the phrase "above zero" or "zero" or "below zero" is displayed through (Label2) if we try to draw a flowchart compatible with (Select .. Case).

The Flowchart when using (Select...Case)



- The code becomes as follows

```
Private Sub Button1_Click (ByVal sender  As  System
    Dim  Degree  As  Single
      Try
      Degree = Me.Textbox1.Text
    Select  Case  degree
    Case 0
        Me.Label2. Text = “صفر”
    Case Is > 0
        Me.Label2. Text = “فوق الصفر”
    Case Is < 0
        Me.Label2. Text =  “تحت الصفر”
    End  Select
      Catch ex As Exception
         MsgBox ("أدخل عدد")
         Me.Textbox1.Focus( )
         Me.Textbox1.Text = " "
      End Try
  End Sub
```

Using "Try .. Catch" in code is enrichment

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Notice:

- Flowchart illustrates more than two possible paths (branches) out of the decision making symbol; which is a comparison that evaluates a question about the value of variable **(D)**; and according to this value the branching of the code differs.

- In the previous code:

- MsgBox( ) is a method used to display an error message to user of the program.

  MsgBox ("أدخل عدد")

- Focus( ) is a method used to placed mouse in the text box.

  Me.Textbox1.Focus( )

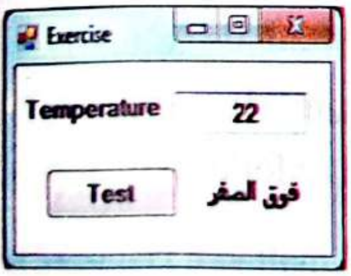
- The string value is empty **" "**, used to clear the contents of the Text box.

  Me.TextBox1.Text = **" "**

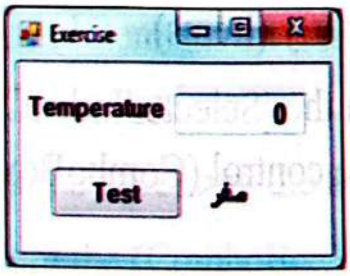
- Using **"Try .. Catch"** in previous code is **enrichment**.

- Execute the program by pressing the key **(F5)**.

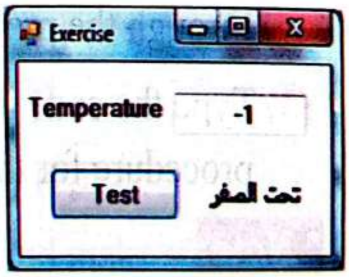
- Enter a different values in text box, you will sea messages as follows:



Temperature 22
فوق الصفر



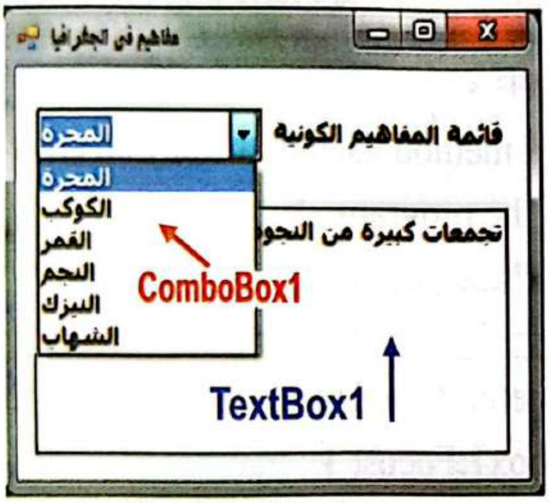
Temperature 0
صفر



Temperature -1
تحت الصفر

Exercise

- Through your study in geography, you learned a lot of concepts such as the galaxy, the planet and the star … etc.
- Create a project containing a form as the follows:


مفاهيم فى الجغرافيا
قائمة المفاهيم الكونية
المجرة
المجرة
الكوكب
القمر
النجم
النيزك
الشهاب
ComboBox1
TextBox1

تجمعات كبيرة من النجو

The User interface

* **Required:** Type the necessary code, so that on selecting one of the elements of a ComboBox, its definition appears in the TextBox.

*** Instructions:**

(1) Set the value of the property (Multiline) for the (TextBox) to "true".

(2) Add the following items (Galaxy – Planet – Moon – Star – Meteoroid – falling star) for the (ComboBox) control through the property (Items).

(3) Type the code in the (SelectedIndexChanged) event procedure for the control (ComboBox) as follows:

*** Note:**

- (Index) Refers to the item number into the "ComboBox" control.

```
Private Sub CombBox1_SelectedIndexChanged (ByVal '
  Select Case CombBox1. SelectedIndex   ' تخصيص رقم العنصر المحدد
    Case 0   ' الحالة الأولى عند اختيار أول عنصر الذى ترتيبه صفر
 TextBox1.Text = " تجمعات كبيرة من النجوم المختلفة الأحجام والأشكال والأنواع "
    Case 1   ' الحالة الثانية عند اختيار ثانى صف الذى ترتيبه 1
 TextBox1.Text = "جسم معتم لا يشع ضوء ولا حرارة ويستمد ضوءه وحرارته من نجم آخر"
    Case 2   ' الحالة الثالثة عند اختيار ثالث صف الذى ترتيبه 2
 TextBox1.Text = " جسم معتم أصغر حجماً من الكوكب يعكس ضوء الشمس الساطع عليه "
    Case 3   ' الحالة الرابعة عند اختيار رابع صف الذى ترتيبه 3
 TextBox1.Text = " جسم مضيئ ملتهب يشع ضوء وحرارة "
    Case 4   ' الحالة الخامسة عند اختيار خامس عنصر الذى ترتيبه 4
 TextBox1.Text = " جسم صلب كبير يحترق جزئياً عند احتكاكه بالغلاف الجوى "
    Case 5   ' الحالة السادسة عند اختيار سادس صف الذى ترتيبه 5
 TextBox1.Text = "جسم سماوى صلب يسبح فى الفضاء حول الشمس على هيئة سهام ضونية"
    Case Else   ' وإلا يتم تنفيذ الأوامر التالية فى حالة عدم تحقق جميع الشروط السابقة
 MsgBox (" يرجى اختيار أحد المفاهيم ")
      End Select '   نهاية جملة Select .. Case
  End Sub
```

✶ Notice:

- We have depended, in writing of the code, on the order of the elements within the tool **(ComboBox)** where the first item has an **(index) 0**, the second item has an **(index) 1** and the third item has an **(index) 2**, ….. and, so on.

(4) Execute the program by pressing the key **(F5)**.

(5) Select any item from the **(ComboBox)** and make sure of its definition.

Code

```
Dim x As integer = 2
Dim y As Integer = 3
Dim z As integer = 4
 Select Case x
  Case x = y
     Label1. Text = "First"
  Case x >= y
     Label1. Text = "Second"
  Case x < > z
     Label1. Text = "Third"
  Case Else
     Label1. Text = "Forth"
End Select
```

Result

A) First
B) Second
C) Third
D) Forth

Second: State whether the following statements are true (✓) or false (×):

1. The number of possible branches when using statement of (If .. Then .. Else) is 2. ( )
2. In (If) statement, the code that follows (Else) is executed when the result of the conditional expression is (True). ( )
3. The property that determines the selected item in a (ListBox) is (SelectedIndex). ( )
4. "Select ... Case" statement is used in Branching depends only on the value of one variable and there are many conditions.( )
5. The (Select .. Case) statement is used to test more than one conditional expression using only one variable. ( )
6. If the value of variable (X) is 15 and value of variable (Y) is 350 then the result of the conditional expression (Y <= X) is false.( )
7. The use of (Else) keyword is optional in (If .. Then .. Else) statement. ( )

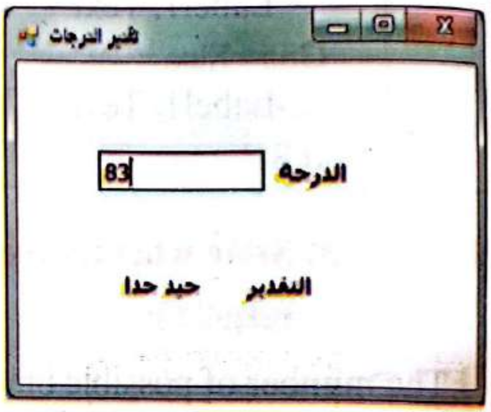
CamScanner الممسوحة ضوئيا بـ

❽ **"Focus( )"** is method used for concentration the mouse inside the TextBox. ( )

❾ The code "<=" is mean greater than or equal. ( )

★ **Third: Consider the following code, which determines the appropriate evaluation of each value (degree) entered in (Textbox1).**

```
Dim deg  As  Single
   deg = Me. TextBox1. Text
 Select Case deg
      Case Is >= 85
           Label2. Text = "ممتاز"
      Case Is >= 75
           Label2. Text = "جيد جدا"
      Case Is >= 65
           Label2. Text = "جيد"
      Case Is >= 50
           Label2. Text = "مقبول"
      Case Is < 50
           Label2. Text = "ضعيف"
   End select
```



الدرجه 83

التقدير جيد جدا

- **Write down the result displayed in (Label1); when you enter the following values (degrees) in (Textbox1).**

Degree	Result
30	....
84	....
64,4	....
Zero	....
114,3	....

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★ **Fourth: The following code calculates the area of a circle of radius (R). Rewrite this code in left column so that; the message "غير مسموح" will be displayed; when you enter a negative number in (TextBox1); whose value is assigned to variable (R).**

....	Dim R , Area As Single
....	
....	Const pi As Single = 22 / 7
....	
....	R = Me.TextBox1.Text
....	Area = 2 * pi * R ^ 2
....	
....	MsgBox("Area of circle =" & Area)
....	

General questions for the chapter

★ **First: Put each word in the right place:**

(Conditional expression – <= – SelectedInex – "Select .. Case" – <> – False – Focus)

❶ .... is a property which is used to identify the selected item in (listBox).

❷ Syntax statement of (IF), ... comes following to "IF".

❸ Using .... factor results in errors in the operation when the value of the left side is equal to the value of the right side .

❹ The method .... is used to move the mouse pointer to Text box.

❺ The code "<=" is mean smaller than or equal.

❻ In statement of (If), the code that follows (Else) is executed when the result of the conditional is ....

❼ Branching using .... reduces the code and makes it easier and clearer.

Second: State whether the following statements are true (✓) or false (×):

❶ The number of possible branches when using statement of (If .. Then .. Else) is 2. ( )

❷ In statement of (If) the code that follows (**Else**) is executed when the result of the conditional is (True). ( )

❸ The operator (&) is used for comparison operations. ( )

❹ The statement of (Select .. Case) is used to test one conditional expression only. ( )

❺ If the value of variable X is "50" and value of variable Y is "200", the result of the conditional expression (X <= Y) is false. ( )

❻ The statement of "Case Else" uses with (**Select … Case**). ( )

❼ The result of the following code is "**True**":

```
Dim A, B As single = 18
If (A = B) Then MsgBox("You all right").
```

( )

❽ Select … Case statement is similar to the conditional statement (If … Then). ( )

❾ The code <> is of the comparison factors. ( )

❿ The operator "**@**" is one of the logical comparison operators. ( )

★ Third: Put each word in the right place:

(conditional expression – **Mode** – **SelectedInex** – **<>** – **Focus**)

❶ …………….. is a property which is used to identify the selected item in (ListBox).

❷ It is a part of programming code and it is result "**True/False**".

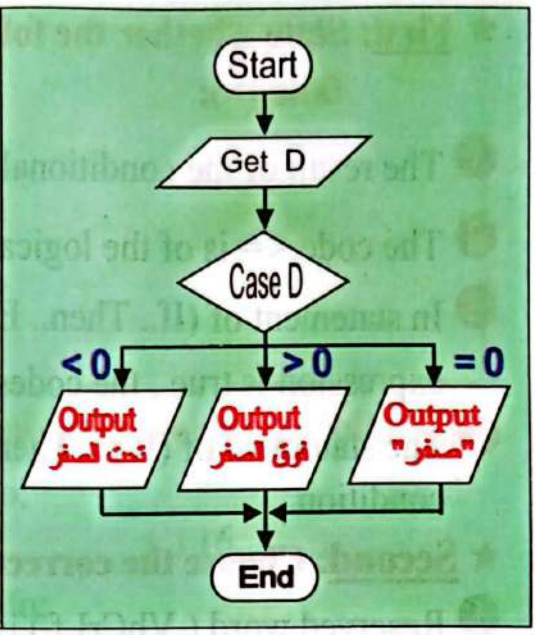
❸ Using ………… factor results in errors in the operation when the value of the right side is equal to the left one.

❹ ……….. method is used to move the Mouse pointer to Text box.

❺ ……….. function used to obtain the rest of the numeric division.

★ **Fourth: Complete the code in the left side of the table below depending on the solution steps (Flowchart) in the right side:**

```
Dim D As Single
.......... = Me. Textbox1. Text
      Select Case ....................
      Case 0
Me. .......... . ...... = “صفر”
      Case Is < 0
Me. .......... . ...... = “تحت الصفر”
      ..............................
Me.Label2.Text = “فوق الصفر”
      ..............................
```



★ **Fifth: Give the suitable term to the following sentences:**

❶ It is used to identify the index of the selected item from the list.

❷ It means the number of the item in the list and it starts from “Zero”.

❸ This event occurs when changing the selected item in the list.

❹ Of the comparison factors, means greater than or equal.

★ **Sixth: Choose the result of executing each of the following codes**

```
Dim Price As Decimal = 28,5
 Select Case Price
     Case Is < 20
         MsgBox( “Good” )
     Case Is <= 25
         MsgBox( “Very good” )
     Case Else
         MsgBox( “excellent” )
End Select
```

a) Good   b) Very good   c) excellent

Questions from governorates exams

★ **First: State whether the following statements are true (✓) or false (×):**

❶ The result of the conditional expression (50 <= 20) is true. (   )

❷ The code <= is of the logical factors. (دمياط) (   )

❸ In statement of (If.. Then.. Else), when the result of the conditional expression is true , the codes after Then are executed. (   )

❹ The statement of (If … Then) is used to test more than one condition. (   )

★ **Second: Choose the correct answer:**

❶ Reserved word (VbCrLf) is used to:
(create a new line – organize code reading – link between text)

❷ The result of code (100 < > 200) is:
(False – True – Ten) (الغربية)

❸ Using ………… factor results in errors in the operation when the value of the right side is not equal to the left one.
(>= – <> – =) (الدقهلية)

❹ To store the age of the student inside a variable, we use this kind of variable. (Object – String – Date) (الشرقية)

★ **Third: Answer the following:** (الغربية)

❶ Declare two variables (Computer , Arabic) as a non-integral Variables:

❷ Correct the error in code (Const X As Integer > 10):

❸ The result of arithmetic Expression (5 + 3 * 2 * 2) is:

❹ Complete the following code to display message ("غير مسموح") when the user enter negative number in TextBox1 whose value is assigned to variable (R).

(a) R = ………….Text **(b)** IF …….. Then **(c)** MsgBox ……

★ Fourth: Read the following code: (الاسماعيلية)

```
Dim Age, Mark, Total As single
      Age = 25,5
      Mark = 90
    If Age < 26 Then
      Age = 16
      Mark = 100
    End If
      Total = Mark * 2
```

After execute, choose the correct answer for each of the following:

❶ The value of variable Age is equal to:

A) 25,5　　B) 90　　C) 16

❷ The value of variable Mark is equal to:

A) 90　　B) 100　　C) 25,5

❸ The value of condition Age < 26 is:

A) 25,5　　B) True　　C) False

❹ The value of the variable Total worth:

A) 200　　B) 180　　C) 190

★ Fifth: [A]: Give the suitable term to the following sentences:

❶ The statement is used when there are two alternatives. (الشرقية)

❷ The property which is used for add items in the ListBox in design mode. (كفر الشيخ)

[B]: IF X , Y , J , K , Z values are as follows: (الاسكندرية)

X = 8 , Y = 2 , J = 3 , K = 4

- Select the correct value of the variable **"Z"** after the execute of the following commands:

```
IF  X > Y  Then
  Z = X – Y
Else
  Z = J + K
End If
```

A) 6　　B) 7　　C) 8

★ **Sixth: Read the following code: (دمياط)**

IF (TextBox1.Text = 75,5): **Determine what the result after executed the following code.**

```
Dim score As Decimal
      score = (Me . TextBox1. Text)
    Select Case score
 Case Is >= 90.0
    Me. Label2 . Text = "Excellent"
 Case Is >= 75.0
    Me. Label2 . Text = "Very Good"
 Case Is >= 60.0
    Me. Label2 . Text = "Good"
 Case Is >= 50.0
    Me. Label2 . Text = "Sufficient"
 Case Else
    Me. Label2 . Text = "Insufficient"
 End Select
```

★ **Seventh: Complete the following code by choosing the suitable from between the brackets: (الغربية)**

(End – Age > 16 – Stop – MsgBox – Finish)

(1) IF ………….. Then
(2) ………………….. ("You can get an ID Card")
(3) ………… IF

★ **Eighth: Put true (✓) or false (×):**

1. User input is received through several controls including TextBox. (   )
2. The variable of type Long takes the value True or False. (   )
3. Declaring variable is done using the Dim statement. (   )
4. One of the rules for naming variables in program is variable names must begin with a number or a letter. (   )

School Questions ?

★ **First: Answer the questions with the help of the following code:**

```
If X >= 50 Then
      MsgBox("successful")
End If
```

(1) MessageBox is shown with the text "successful" when ....

(2) If the value of X equals 50, the result of executing code is ....

(3) If the value of X equals 62, the result of executing code is ....

★ **Second: Answer the following questions using the following code line:**

```
. If X <0 Then MsgBox (العدد موجب) Else MsgBox (العدد سالب)
```

(1) Write the conditional expression in the preceding statement ......

(2) The code to be executed when the condition is true is ....

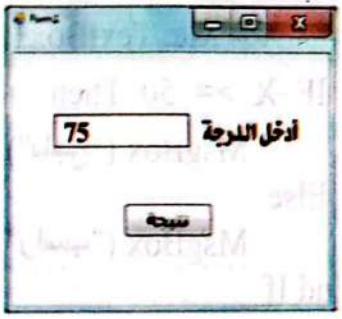
(3) The code to be executed when the condition is false is ....

★ **Third: Answer the following questions with the help of the screen and the code in the table:**

Code

```
Private Sub Button1_Click(
   Dim X As Single
      X = Me.Textbox1.Text
   If X >= 50 Then
         MsgBox( "ناجح")
   End If
End Sub
```

Screen



(1) The purpose of the program is ....

(2) The code is executed if the event ...... occurred on ... control tool.

(3) Type of variable X in the code is ....

(4) "Me" in the code refers to ....

(5) We input the value (50) in the text box, the result of the implementation of the code is ....

★ **Fourth: Complete the following table with the required code, using the general syntax conditional statement "IF .. Then .. Else":**

```
If Conditional Expression Then
        Code
Else
        Code
End If
```

- So as to show a message box having the word "مصر" if the value of the variable "Country" is equal to the "Egypt" or message box having the word "Egypt" appears:

	Statement	Code
1	Conditional expression	
2	Result of achieving the condition "True"	
3	Result of not achieving the condition "False"	

★ **Fifth: Answer the following questions with the help of the code:**

```
Dim X As Single
     X = Me. TextBox1. Text
  IF  X  >=  50  Then
          MsgBox ("ناجح")
  Else
          MsgBox ("راسب")
End If
```

(1) If the value of X = 76, the result of executing the code is:

....

(2) If the value of X = 49, the result of executing code is:

....

(3) Rewrite the code of "Block If" to appear on only one line:

....

★ Sixth: After studying the code, answer the following questions:

```
Dim N As Long
      N = Me. TextBox1. Text
   IF N Mod 2 = 0 Then
       MsgBox("الرقم زوجى")
   Else
       MsgBox("الرقم فردى")
 End If
```

(1) Modify the code so that the "الرقم زوجى" text appears in a label "Label2" and "الرقم فردى" text appears in a label "Label2" instead of the message box.

(2) Replace the type of variable "N" to be "Integer".

★ Seventh: The following code receives any number of a TextBox, and stores it in a variable, and then tests its value. If the number is even or odd, a Message box appears showing that:

- **Required:** Retype the code after discovering the errors and correcting them so that the result of its implementation is right.

Error Code	Correct code
Dim **X** As Integer	....
N = Me. TextBox1. Text	....
IF **N** Mod 2 = 0	....
MsgBox("الرقم زوجى")	....
Else	....
MsgBox("الرقم فردى")	....
	....

★ **Eighth: After studying the following code, answer the following questions:**

```
Private Sub Button1_Click(ByVal sender as System
    Dim degree As Single
     Try
        degree = Me. TextBox1. Text
          Select Case  degree
               Case 0
                    Me. Label2. Text = "صفر"
               Case Is < 0
                    Me. Label2. Text = "تحت الصفر"
               Case Is > 0
                    Me. Label2. Text = "فوق الصفر"
          End Select
    Catch ex As Exception
          MsgBox("أدخل عدد")
          Me. TextBox1. Focus( )
          Me. TextBox1. Text = " "
    End Try
 End Sub
```

- Using "Try .. Catch" in code is enrichment – ask your teacher:

(1) The purpose of the code is ………………………………..

(2) If you learn that: Degree = (-3), the text appears in the message box is ……………..

(3) The code is executed when the event (………) occurs on control tool (………….).

(4) Type of variable (degree) is ………………………

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Chapter Three

Looping & Procedures

Chapter Three
loop

★ By the end of this chapter, you will be able to:

- Identify / clarify the concept of iterative loops.
- Use (For....Next) statement to execute "Code" for undefined number of times.
- Use (Do....Loop) statement to keep "code" running for undefined number of times.
- Declare the (Sub) procedure.
- Call the (Sub) procedure.
- Use (Parameters) when declaring a (Sub) procedure.
- Declare a Function.
- Call a Function.
- Differentiate between a Sub Procedure and a Function.

Looping & Prosedures

★ **PREFACE:**

- We have learned how to execute a specific code, based on a conditional expression.
- You will learn how to repeat a certain code for a number of times (which is called Loops) using **(For ... Next)** and **(Do While ... Loop)**.

Using (For ... Next) statement

- It is one of the limited loop statements.
- It is used when we want to repeat a code for specific number of time.

General syntax for statement (For ... Next)

```
         Counter
For Variable = Start value To End value [Step add value]
       Code. The statements that are executed.
 Next [Variable]
```

Where:

- **For:** represents start of the limited repetition.
- **Variable:** is the name which represents the counter and its type must be numeric (integer or decimal).
- **Start Value:** is the start value of the counter or the beginning of repetition is a numeric value.
- **End Value:** is the value of the end of the counter and the end of the repetition is also a numeric value.

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- **Add Value:** is the increment value of the counter or value over the counter until it reaches the end value (Optional).
- **Code:** is command or more to be replicated and be between the beginning of the loop (for) and its end (Next).
- **Next:** represents end of the limited repetition.

Note:

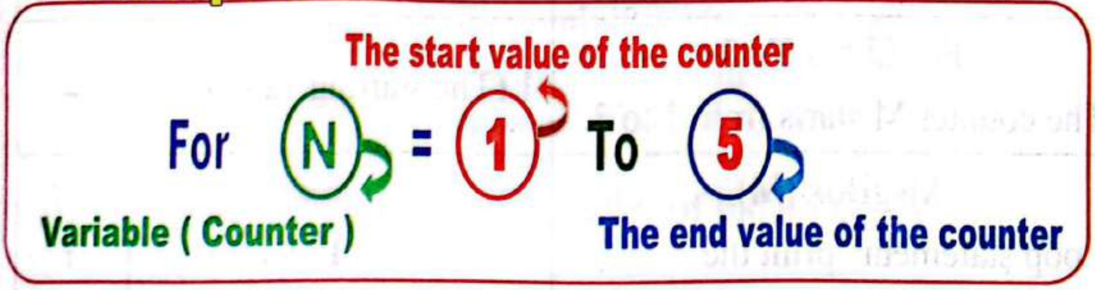
(1) The default value to increase the counter is positive 1.

(2) If the value of the increment is positive 1, it can be dispensed with writing **Step Add Value**, as the default value to increase the counter is positive 1.

(3) Typing a variable name counter next to "Next "optional

(4) The codes are repeated inside the loop until the counter value become greater than the end value.

Example

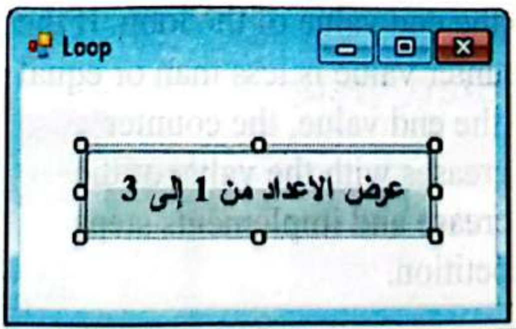

The start value of the counter
For
N
=
1
To
5
Variable (Counter)
The end value of the counter

Exercise

* Design the following form window, to have the numbers from 1:3 displayed in the Message box on pressing the button "View number from 1 to 3":

- **Implementation steps:**

(1) Design the form window as in the figure.

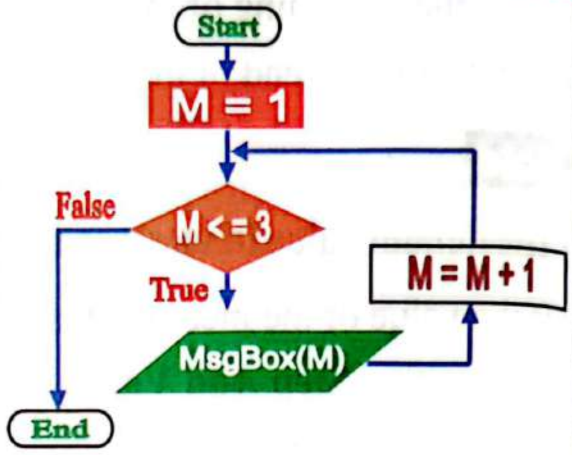

Loop
عرض الاعداد من 1 إلى 3

(2) Use the following table to understand the nature of the work program, and study the code with the help of your teacher:

Code

```
Private Sub Button1_Click (By
 Dim M As Integer
    For M = 1 To 3
        MsgBox( M )
    Next
End Sub
```

Flow Chart



★ Tracking the code as shown in the table ★

Meaning of code	Value of Variable (M)	Result
Dim **M** As Integer To declare the counter variable.	**0**	-
For **M** = 1 To 3 The counter M starts from 1 to 3.	1 (The starting value).	-
MsgBox (**M**) Loop statement "print the value of M".	**1**	**1**
Next - The end of the loop. - The program returns to "For statement" testing the counter skip to the end value of the loop. If the counter value is less than or equal to the end value, the counter increases with the value of the increase and implements steps repetition.	M=M+1 (The increment of M with 1). Is the value of M greater than the end value (the result is, False).	-

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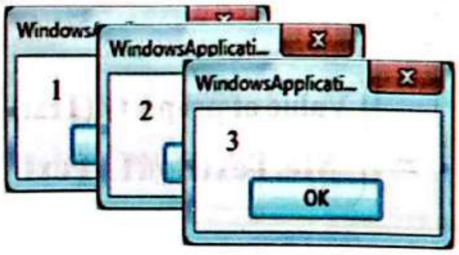
★ "Tracking the code" ★

Meaning of code	Value of Variable (M)	Result
MsgBox (M) (repetitive statement) Print the new value of m.	2	2
Next The same previous procedure.	The increment of M with 1 (M=2+1) Is the value of M greater than the end value (the result is, False).	-
MsgBox (M) repetitive statement "Print new value of the counter after the increase".	3	3
Next The same previous procedure.	The increment of M with (M=M+1) Is the value of M greater than the end value (the result is, True)? Exiting out of the loop iteration and implementation of the following commands Next, if necessary.	-

(3) Type the code in the event handler of the button "display numbers from **1** to **3**".

(4) Run the program by pressing **(F5)**, and then click the command button "View numbers from **1** to **3**".

★ **Notice that:** you receive a msgbox that displays number **"1"** and when you click the button (ok), another message box appears displaying the number **"2"** and so on till the value **"3"**.


1

2

3

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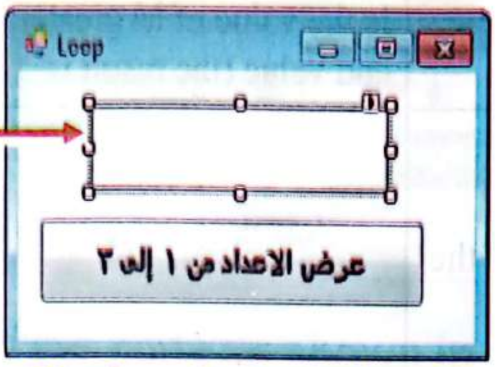
Exercise

* With the kelp of your teacher, modify the code in the previous exercise to display the number from **1** to **3** in a **TextBox**:

(1) Add a **TextBox** to the form with the name **(TextBox1)**.


Loop
عرض الاعداد من ١ إلى ٣

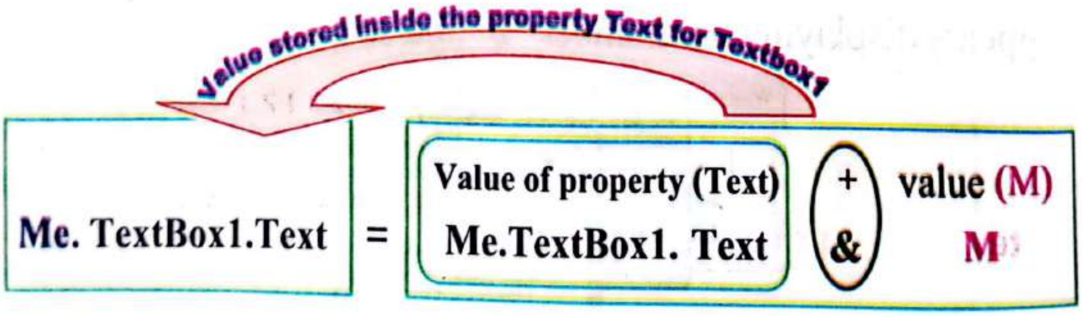
The name of TextBox:TextBox1

The form to be designed

(2) Modify the code to the printed numbers inside the **TextBox** as the following.

```
Private Sub Button1_Click (ByVal sender As System
   Dim M As Integer
     For M = 1 To 3
      Me. TextBox1. Text = Me. TextBox1. Text & M
     Next M
  End Sub
```

*** Illustration of the above assignment statement:**


Value stored inside the property Text for Textbox1
Me. TextBox1.Text
=
Value of property (Text)
Me.TextBox1. Text
+
&
value (M)
M

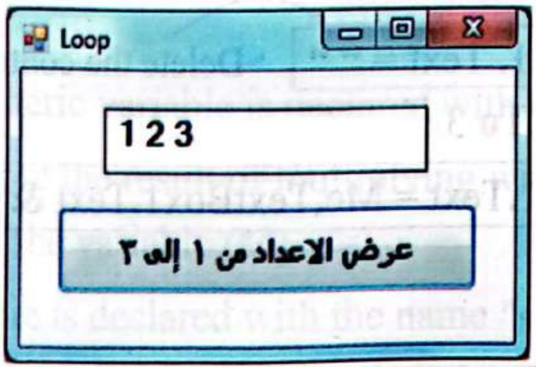
Notice:

(1) The command within the iterative loop, which means assigning the value of the variable (M) to be concatenated with what is inside the TextBox, using the concatenating operator "&" to concatenate the two strings together.

(2) If you type the line referred to in this way: "Me.TextBox1.text = M", we won't notice the change of the variable (M) value during implementation, but another value which is "3", will appear because the output displayed will be the last value as the output displaced is in the same place.

(3) Run the program.

(4) Click the button "Show numbers from 1 to 3", and observe the appearance of the numbers in the text box, as shown.

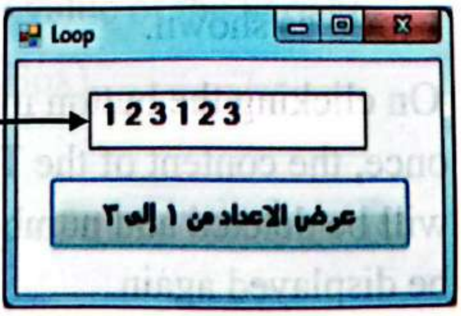


1 2 3

The form after clicking the button in runtime mode

Improve the form of output

(1) If you click the button "View numbers from 1 to 3" again, the numbers from 1 to 3 are displayed every click, as shown.



1 2 3 1 2 3

Numbers in the text box TextBox
after clicking the button again

* So, you can add the command **(Me.TextBox1.Text = "")** before the iterative loop to delete the contents of the text box (TextBox) before the implementation of the iterative loop.

(2) Dear student, You can display numbers inside the **TextBox** so that each number is a new line by doing the following:

★ Set the value of the property **(Multiline)** to **(True)** for control tool (TextBox1) to deal with multiple lines of text in a TextBox.

★ Modify the code inside the loop by adding "Carriage Return" symbol "vbCrLf" key code as follows:

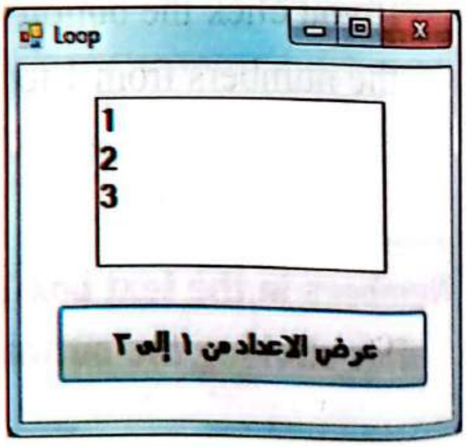
```
Private Sub Button1_Click(ByVal sender As System .
 Dim M As Integer
 Me. TextBox1. Text = “ “   ‘ Delete the content of TextBox1.
   For M = 1 To 3
 Me.TextBox1.Text = Me.TextBox1.Text & M & vbCrLf
   Next  M
End Sub
```

↳ **vbCrLf**: String constant, used to add a new line.

↳ **vbCrLf** = Visual Basic Carriage Return Line Feed.

★ Run the program, then click the button "View numbers from 1 to 3" as shown.

★ On clicking the button more than once, the content of the TextBox will be deleted and numbers will be displayed again.



```
1
2
3
```

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★ Use your experience from the two previous exercises to print the multiplication table of **3** in a **(TextBox)** with the help of the following code.

```
Dim M, Product As Integer
Dim Str As String
    Me. TextBox1. Text = " "
For M = 1 To 12
  Str = 3 & " x " & M & " = "
  Product = 3 * M
Me.TextBox1.Text = Me.TextBox1.Text & Str & Product & vbCrLf
  Next M
```

✱ Notice:

(1) An integer numeric variable is declared with the name **"product"** to store the result of multiplying with every change in the value of the variable **(M)**.

(2) A string variable is declared with the name **"str"** to store the shape of the multiplication statement so that we can get the results through the figure (**3x1=** or **3x2=** etc) and so on as a string sequence with every change in the variable value "M".

(3) The value of the variable **(str)** is displayed, and then the concatenation operator **"&"** then the value of the variable **(product)** are displayed in the **(TextBox)**.

✱ Note:

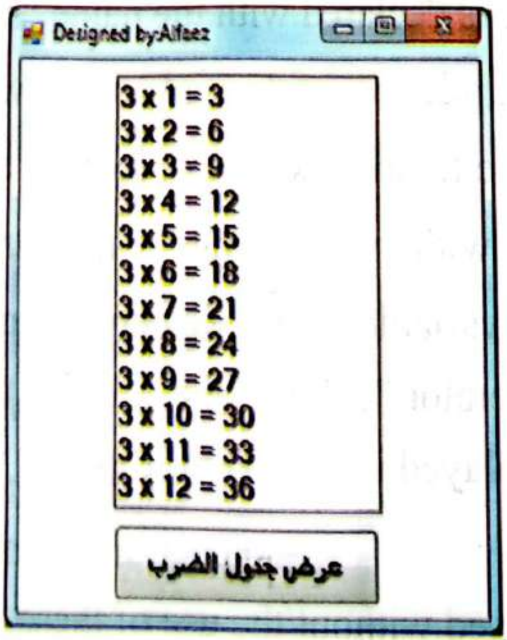
- The code can be typed without the use of these variables as follows:

```
Private Sub Button1_Click (ByVal
    Dim M As Integer
        Me. TextBox1. Text = “ “
      For M = 1 To 12
Me. TextBox1.Text = Me.TextBox1.Text & 3 & “x” & M & “=” & 3 * M & vbCrLf
      Next M
  End  Sub
```

*** Illustration of the above assignment statement:**

```
                        Shape of multiplication    The result
                                   ↑                    ↑
= Me.TextBox1.Text & 3 & “x” & M & “=” & 3 * M & vbCrLf
```

- Run the program by pressing (F5) key.
- Then press the button "View 3 multiplication table", to have the result of execution as shown the following figure.



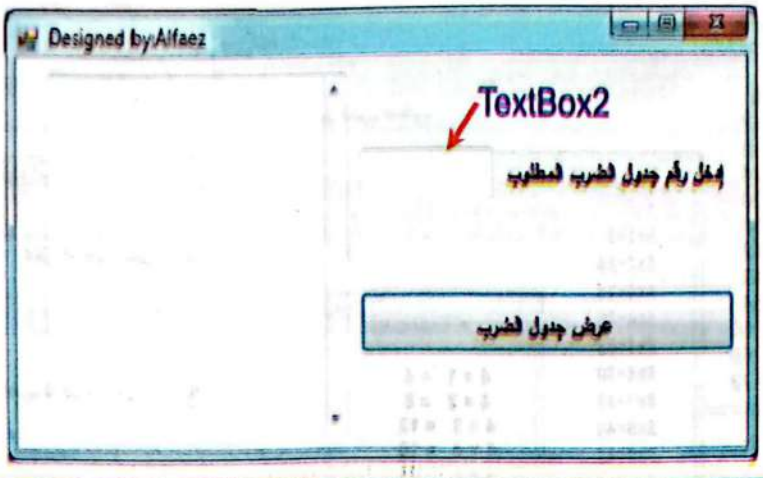
Designed by:Alfaez

```
3 x 1 = 3
3 x 2 = 6
3 x 3 = 9
3 x 4 = 12
3 x 5 = 15
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
3 x 10 = 30
3 x 11 = 33
3 x 12 = 36
```

Showing table "3" multiplication

Exercise

- Develop the program in the previous exercise to display the multiplication table of any number, you enter in the **(TextBox)** as shown in figure.

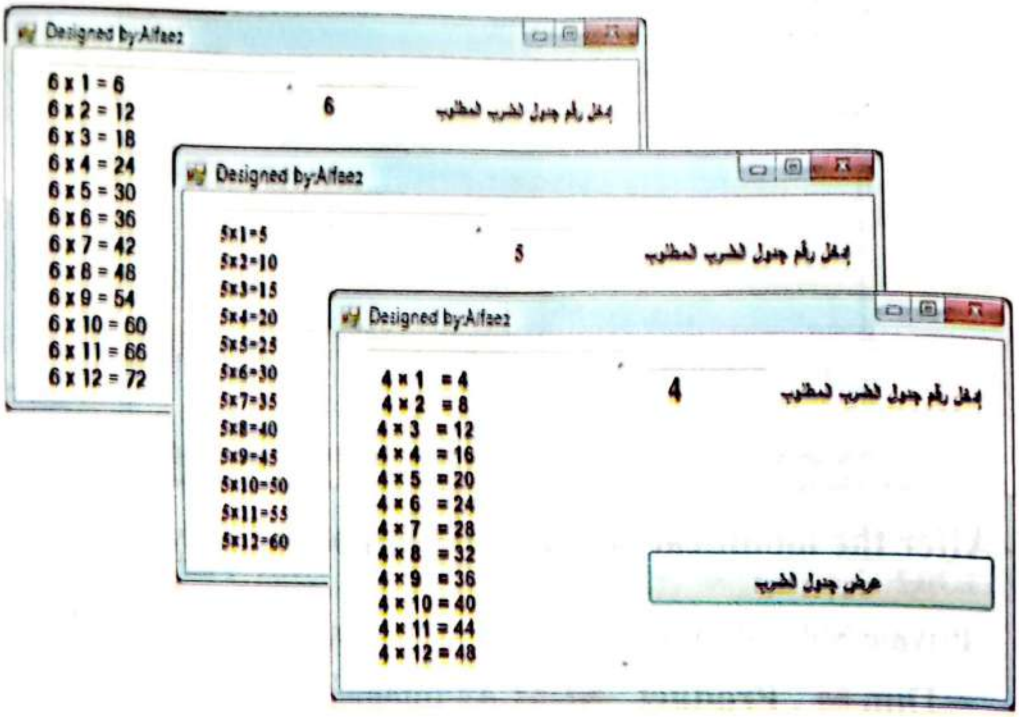

Designed by Alfaez
TextBox2
إدخل رقم جدول الضرب المطلوب
عرض جدول الضرب

- **After the modification, the code will be as follows:**

```
Private Sub Button1_Click (ByVal sender As System .
   Dim M , Product , NUM As Integer
   Dim Str As String
     NUM = Me.TextBox2. Text
      Me. TextBox1. Text = " "
     For M = 1 To 12
   Str = NUM & "x" & M & " = "
   Product = NUM * M
Me.TextBox1.Text = Me.TextBox1.Text & Str & Product & vbCrLf
    Next M
End  Sub
```

*** Note that:** number **(3)** is replaced by the variable **(NUM)**; which contains the value of the **(TextBox2)**.

- Press on the key (F5) in the keyboard to run program.
- Write number of the multiplication table, that you need in the text box, and click on the button (عرض جدول الضرب), the result will be as shown in figures.



```
6 x 1 = 6
6 x 2 = 12
6 x 3 = 18
6 x 4 = 24
6 x 5 = 30
6 x 6 = 36
6 x 7 = 42
6 x 8 = 48
6 x 9 = 54
6 x 10 = 60
6 x 11 = 66
6 x 12 = 72
```

6

```
5x1=5
5x2=10
5x3=15
5x4=20
5x5=25
5x6=30
5x7=35
5x8=40
5x9=45
5x10=50
5x11=55
5x12=60
```

5

```
4 × 1  = 4
4 × 2  = 8
4 × 3  = 12
4 × 4  = 16
4 × 5  = 20
4 × 6  = 24
4 × 7  = 28
4 × 8  = 32
4 × 9  = 36
4 × 10 = 40
4 × 11 = 44
4 × 12 = 48
```

4

Control the start value, end value, and step increment in the (For ... Next) statement

- * The previous exercises, the start value is always smaller than the end value, so the increase in the counter was a positive value as the default increment value is positive one.
- * But we can determine the values of another increment after (Step), it can be an integer numeric value or decimal; positive or negative.
- * The following examples illustrates the different cases for using "For ... Next" statement.

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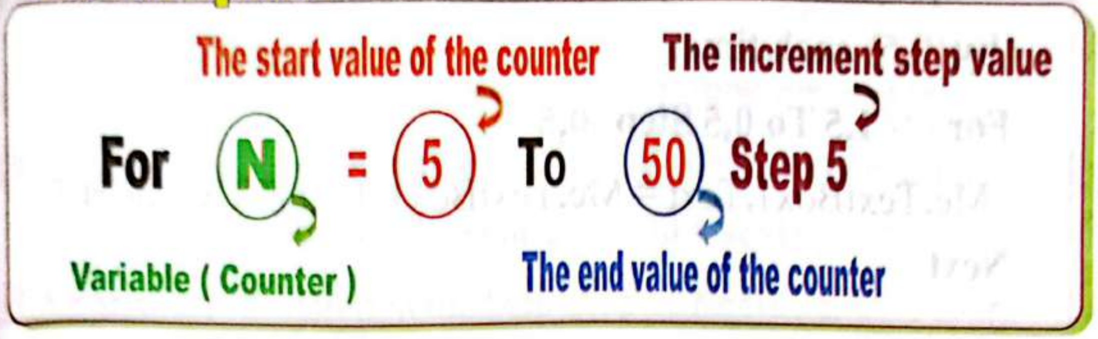
Example



```
For N = 5 To 50 Step 5
```

The start value of the counter
The increment step value
Variable (Counter)
The end value of the counter

* A variety of examples for using "For ... Next" *

❶ To display the odd numbers from (1) to (10):

```
For i = 1 To 10 Step 2
 Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

❷ To display the even numbers from (2) to (10):

```
For i = 2 To 10 Step 2
  Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

❸ To display the numbers divisible by 3 from (3) to (20):

```
For i = 3 To 20 Step 3
 Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

❹ To display the even numbers descending from (10) to (1):

```
For i = 10 To 1 Step -2
 Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

⑤ **Display the numbers from (1,5) to (0,5) with decremented by (0,5) each time:**

```
For i = 1,5 To 0,5 Step -0,5
 Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

⑥ **To display the numbers from (1) to the value of (B) at increasing value of (C):**

```
For i = 1 To B Step C
 Me.TextBox1.Text = Me.TextBox1.Text & i & vbCrLf
Next
```

★ From the previous examples, we conclude that:

(1) We can determine the rate of increment of the variable after (Step) and then type a numeric value or numeric variable.

(2) The rate of increment should be negative if the starting value is greater than the end value (example 4 and 5).

(3) The starting value, the end value, or the increase rate can be a decimal number; in this case the loop variable type should be defined to accept decimals such as Single type (Example 5).

(4) The starting value, the end value, or the increase rate can be variable (Example 6).

```
      (1)            (2)            (3)              (4)
For Variable  =  Variable  To  Variable  Step  Variable
```

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Questions ?

★ **First: Give the suitable term to the following sentences:**

❶ Is command or more to be replicated and be between the beginning of the loop (for) and its end (Next).

❷ A variable is declared in the loop (For ... Next).

❸ It is the increment value of the counter or value over the counter until it reaches the end value.

❹ It is used when we want to repeat a code for specific number of time.

❺ It is represents start of the limited repetition.

★ **Second: Put each word in the right place:**

(vbCrLf – "IF ... Then ... Else" – REM – & – 4 – Text – Assignment statement – Add – Variable)

❶ .... is the name which represents the counter and its type must be numeric (integer or decimal).

❷ .... method is used to add an item to ListBox.

❸ .... is a reserved word used to create a new line.

❹ The number of the repetition times in **(For N = 1 To 7 Step 2)** is ..

❺ .... is a statement that has two sides (right hand side and left hand side) separated by the operator (=).

❻ Separates each variable and the other by the concatenation symbol ....

❼ (TextBox1. .... = “ ”) is used to delete the contents of TextBox1.

❽ In the code (..............) the program moves automatically to the codes after "Else" when the condition is False.

❾ The programmer can use the command (.....) in writing remarks that can be referred to within the code, it is not compiled.

★ Third: State whether the following statements are true (✓) or false (×):

❶ The counter label must be typed after "Next" at the end of the repetition. ( )

❷ The starting value, the end value, or the increase rate can not be a decimal number. ( )

❸ The value of the increment step cannot be in minus. ( )

❹ The default value of the increment step in (For… Next) is positive (1). ( )

❺ Upon executing the assignment code (N = 18 Mode 3), N value will be (0). ( )

❻ (vbCrLf) is a correct variable name in Visual Basic.Net. ( )

❼ The code: Label1.Text = " ", used to delete the contents of Label control "Label1". ( )

❽ (For S = 21 To 3 Step -7), is true code. ( )

❾ "Select ... Case" statement is used in Branching depends only on the value of one variable and there are many conditions.( )

★ Fourth: What are (N) values in the following codes:

❶ For N = 1 To 15 Step 2 ……………………………………

❷ For N = 20 To 0 Step -2 ……………………………………

❸ For N = 0 To 7 ……………………………………

❹ For N = 1 To 25 Step 3 ……………………………………

❺ For N = 1,5 To 4,5 Step 0,5 ……………………………………

★ Fifth: Display the following values by using (For ... Next)

❶ (10 – 12 – 14 – 16 – 18) ……………………………………

❷ (13 – 18 – 23 – 28 – 33) ……………………………………

❸ (6,5 – 5,5 – 4,5 – 3,5) ……………………………………

❹ (15 – 16 – 17 – 18 – 19) ……………………………………

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Questions from governorates exams

★ **First: Re-arrange the following steps correctly to calculate the total of the odd numbers from (1:8):** (المنوفية)

```
Total = Total + x           ...............................
   MsgBox ( Total )         ...............................
  Next                      ...............................
  For x =  1  To  8  Step 2 ...............................
Dim x , Total As Integer    ...............................
```

★ **Second: Check the following codes giving the value of variable (X) every time it change:** (البحيرة)

```
Dim X As Integer
Dim i As Integer
     X = 6
  For i =  0  To  3
     X = i + X
  Next
```

★ **Third: Choose the correct answers:**

❶
```
Dim i As Integer
   For i = 20  To  18  Step -2
   Next
       i = .................
```
(16 – 18 – 20) (البحيرة)

❷ The number of the repetition times in the following code:
(For N = 1 To 6 Step 2) is: (3 – 4 – 5) (دمياط)

❸ In the code (For … Next) the program moves automatically to the codes after "Next" when the condition is ………
(False – True – Correct) (الاسماعلية)

❹ Repetition statement that is used when the number of repetitions is already known is: ("Select .. Case" – "If ..Then" – "For .. Next")

❺ The value of the increment ……….. in (for … Next) is optional.
(For – Step – Next) (المنيا)

The use of (Do ... While)

- We used the limited iterative statement "For ... Next" to execute a specific code several times.
- But sometimes you may want to repeat a certain code until a certain condition comes true, or the code can be executed as long as the condition of the loop is true, thus there are other iterative statements such as the statement of "Do while... loop".

- The statement "Do while ... loop" is used to repeat a specific code for a several times of an unknown end, but based on a specific condition.
- The statement "Do while ... loop" is useful if you do not know the number of iterations emphatically.

Example:

* The input of names can be repeated in the "TextBox".

- We can get out of the repetitive loop "The input of names" the names on entering the word "End" for example.

The general syntax

```
Do While + (Conditional Expression)
        Code  The statements that are executed.
Loop
```

↳ The code between the beginning of the loop "Do While" and its end will be implemented as long as the conditional expression is true.

↳ If the condition is not met for any reason, we get out of the iterative loop, and implement the code after the Loop if it exists.

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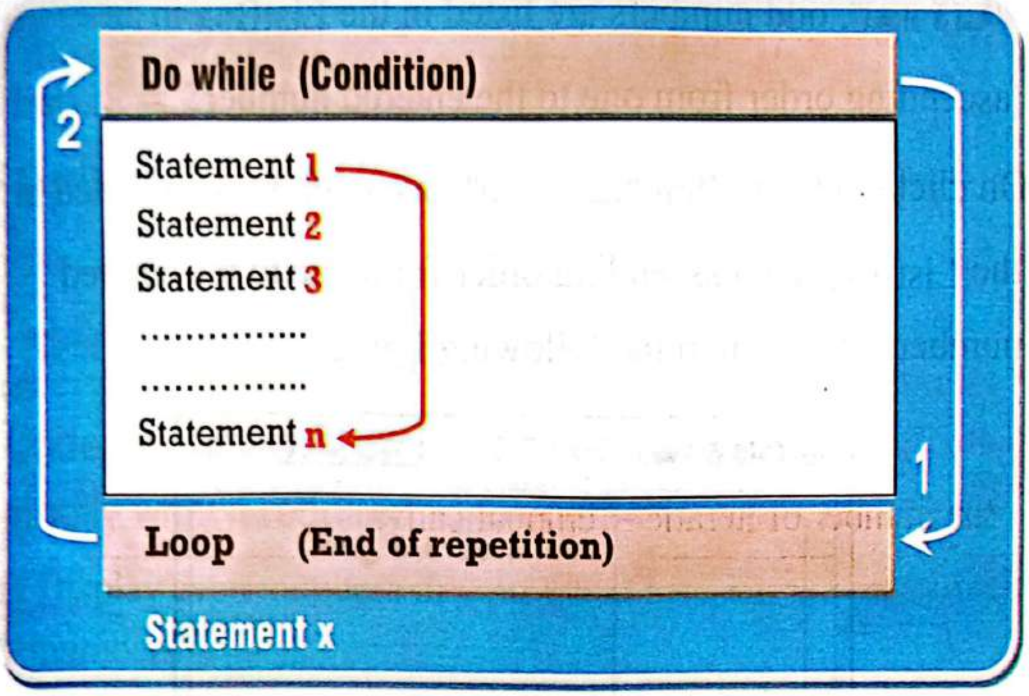
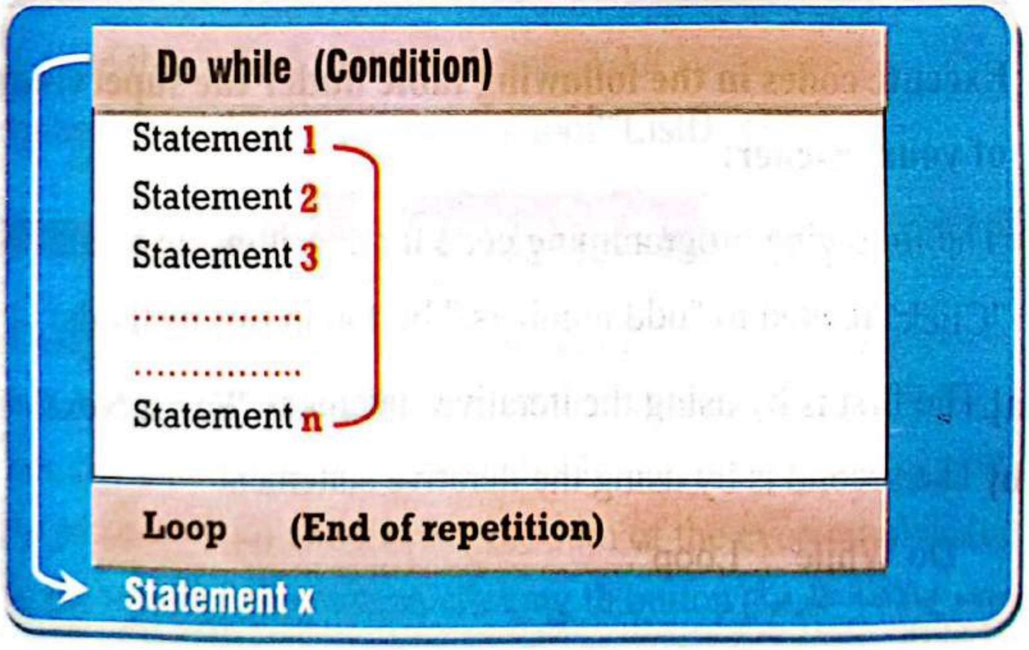
Drawing shows the repeating statement of "Do While .. Loop"

- The code between the beginning of the loop **"Do While"** and its end will be implemented as long as the conditional expression is true.


Do while (Condition)
2
Statement 1
Statement 2
Statement 3
....
....
Statement n
1
Loop (End of repetition)
Statement x

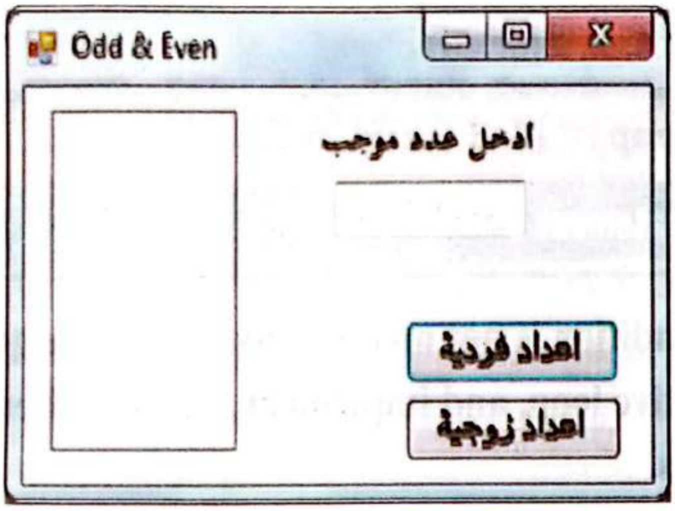
- If the condition is not met for any reason, we get out of the iterative loop, and implement the code after the Loop if it exists.


Do while (Condition)
Statement 1
Statement 2
Statement 3
....
....
Statement n
Loop (End of repetition)
Statement x

Exercise

- Design a project window as shown in the following figure to enter a number in the TextBox, then click the button "أعداد فردية", odd numbers are listed in the ListBox in an ascending order from one to the entered number.

- On clicking the button "أعداد زوجية", even numbers are listed in the ListBox in an ascending order from one to the entered number, as shown in the following figure.



- **Execute codes in the following table under the supervision of your teacher:**

- The following programming code for executing an event "Click" related to "odd numbers," button in two methods:

[a] The first is by using the iterative statement "For ... Next".

[b] The second is by using the iterative statement "Do While ... Loop".

First method

```
Dim N , i , As Integer
 N = TextBox1.Text
 ListBox1. Items. Clear( )

For  i = 2  To  N  Step  2.
ListBox1. Items. Add( i )


Next
```

Second method

```
Dim N , I , As Integer
 N = TextBox1.Text
ListBox1. Items. Clear( )
     i = 1
Do While i <= N
 ListBox1. Items. Add( i )
      i = i + 2
Loop
```

* Under the supervision of your teacher, use your skills to modify what it required to execute that code as follows:

(1) Display even numbers in your event handler related to "Even numbers".

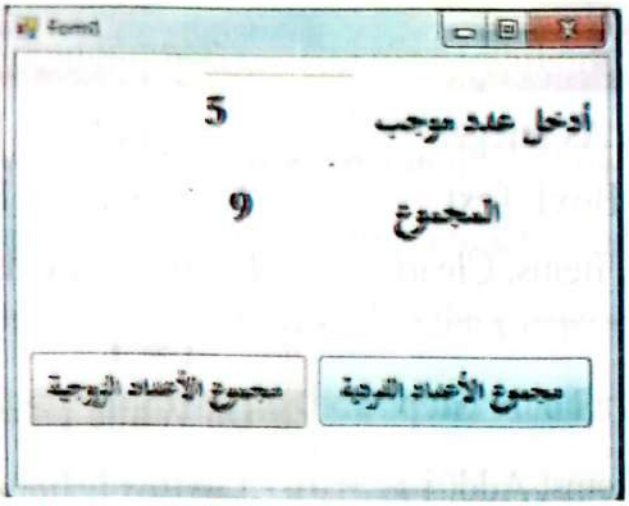
(2) Display odd or even numbers arranged in an descending rather than an ascending order.

*** Notice:** We use the code: ListBox1. Items. Clear( ), to delete the contents of the control tool "ListBox1".

- We use the code: ListBox1. Items. Add(i), to add the value of variable (i) to control tool "ListBox1".

Exercise

- Design the program window, so that it receives a positive number, and displays the sum of the odd numbers (up to the number entered) in the tool "Label3" on clicking the button: (مجموع الأعداد الفردية) and display the sum of the even number (up to the number entered) on clicking th button (مجموع الأعداد الفردية).


Form1
أدخل عدد موجب
5
المجموع
9
مجموع الأعداد الزوجية
مجموع الأعداد الفردية

User interface to display the sum of odd and even

- Use the following guidelines for implementing the program:

(1) The code can be programmed in the click event procedure for the button "مجموع الأعداد الفردية" in two methods, as follows:

First method

```
Dim N , i , Sum As Integer
N = TextBox1.Text

For  i  = 2   To  N   Step  2
    Sum = Sum + i

 Next
Label3. Text = Sum
```

Second method

```
Dim N , I , Sum As Integer
N = TextBox1.Text
    i  = 1
Do While i <= N
  Sum = Sum + i
    i  = i + 2
Loop
Label3. Text = Sum
```

(2) Modify what is required in the previous code to display the sum of even numbers when you press the "total even numbers button".

Questions ?

★ **First: Choose the correct answer for each of the following:**

❶ The purpose of using the Do While Loop statement is:

a) Repeat the code until the conditional expression becomes (True).

b) Repeat the code as long as condition is (True).

c) Repeat the code as long as condition is (False).

❷ To display the odd numbers from (1) to (10):

a) For i = 10 To 1 Step 2　　b) For i = 1 To 10

c) For i = 1 To 10 Step 2

❸ The best Loop used when you know the number of iterations emphatically.

a) Do while　　b) For .. Next　　c) Select .. Case

❹ After executing the following code what will be displayed in the TextBox (txt_display) is:

```
Dim  y  As Integer
    For y = 2 To 10 Step 2
        txt_display.Text = txt_display.Text & y
    Next
```

a) 2　　b) 246810　　c) 2345678910

❺ After executing the following code what will be displayed in the Label (lbl_display) is:

```
Dim  intNum  As Integer = 10
     Do While  intNum < 10
         intNum = intNum + 1
     Loop
         Lbl_ display.Text = intNum
```

a) 10　　b) 11　　c) 0

⑥ After executing the following code what will be displayed in the Label (lbl_display) is:

```
Dim i , Sum As Integer
   For i = 1 To 5
       Sum = Sum + i
  Next
   lbl_display.Text = Sum
```

a) 5 b) 10 c) 15

⑦ What will be the value of the variable (R) after the execution:

```
Dim R as Single = 0,5
       Do While R > 1
           R = R + 0,5
       Loop
 MsgBox( R )
```

a) 0,5 b) 1 c) 1,5

⑧ What will be the value of the variable (D):

```
Dim D As Integer = 1
       Do While D <= 1
            D = D + 2
       Loop
 MsgBox( D )
```

a) 0 b) 2 c) Overflow

⑨ What will be the value of the variable (M)

```
Dim M , Sum As Integer = 1
     For M = 5 To 10 Step -1
         Sum = Sum + M
     Next
  MsgBox( M )
```

a) 0 b) 5 c) 10

★ Second: State whether the following statements are true (✓) or false (×):

❶ The command: MsgBox("3" & "x" & "3"), displays a message box containing number 3 x 3 = 9 ( )

❷ The value of (M) after the execution of the loop: (For M = 3 to 1 Step -1) is 0. ( )

❸ If you do not write (Step) with the (For … Next) statement, it means that the increment value is zero; by default. ( )

❹ (Do … While) statements used when the repetition times are previously known. ( )

❺ The number of the repetition times in the code: (For M = 1 To 2 Step 2) is one time. ( )

❻ The counter label cannot be typed beside Next at the end of (For … Next) statement. ( )

❼ The value of start or end in (For … Next) can be a variable or a property. ( )

❽ In the code (Do … While) the program moves automatically to the codes following "Loop" when the condition is True. ( )

★ Third: Check the following codes and give the value of each variables every time it changes:

```
Dim X , Y as Integer
    X = 8
    Y = 2
      Do While X < 12
         X = X + Y
         Y = Y + 1
            MsgBox( X )
            MsgBox( Y )
      Loop
```

Questions from governorates exams

★ First: Choose the correct answer for each of the following:

① The statement of .... is a limited iterative loop, used the to execute a code several times. [الدقهلية]

a) Select .. Case b) Do while … Loop c) For .. Next

② The statement .... is useful if you do not know the number of iterations emphatically. [قنا]

a) Select .. Case b) Do while … Loop c) For .. Next

③ If counter is .... the end value, the For loop ends and exits the loop. [الغربية]

a) greater than b) Less than c) Equal

④ Each time Visual Basic reach to the .... statement , increments the counter variable and then, compares the new counter value to the end value of the loop. [القاهرة]

a) If … Then b) If … Then … Else c) Next

★ Second: Re-arrange the following steps correctly to calculate the total of the odd numbers from (1 : 20):[كفرالشيخ]

```
    Total = Total + i
      MsgBox ( Total )
     Next
     For i =  1  To  20  Step 2
   Dim i , Total As Integer
```

★ Third: State whether the statements are true (✓) or false (×):

① ListBox1.Text = " " is a true code. [دمياط] ( )

② (For … Next) statement is used for making repetition in which the number of the repetition times are not set. [الدقهلية] ( )

③ To add an item in ListBox1, use the following code:
ListBox1. Items. Add("Item") [المنوفية] ( )

Sample Test 3 April

★ **First: State whether the following statements are true (✓) or false (×):**

① To clear ListBox1 from all the items, use the following code ListBox1. Clear. ( )

② **For i = 15 To 3 Step 3** is a true limited iterative loop. ( )

③ The (Select .. Case) statement is used to test only one conditional expression. ( )

④ The Start value may be greater than End value in (Do ... While) statement. ( )

⑤ The Increment Step in (For ... Next) code should not be more then (1). ( )

⑥ If the value of variable (N) is **70** and value of variable (M) is **100** then the result of the conditional expression **(10 > 100)** is True. ( )

★ **Second: Choose the correct answer:**

① The result of code (If 30 Mode 7 = 0 Then) is:
(Enabled – True – False)

② To store the name of the student inside a variable, we use this kind of variable: (String – Single – Long)

③ The result of code (32 Mod 6) is: (32 – 2 – 6)

④ Reserved word .... is used to create a new line.
(Dim – VbCrLf – Me)

⑤ In the repetition statement .... the repetition occurs when the result of the condition is true.
(Do ... While – If ... Then .. Else – If ... Then)

⑥ .... property is used to add items to ListBox.
(AutoSize – Items – MultiLine)

★ Third: Put each word in the right place:

("=" – SelectedIndexChanged – "For .. Next" – 10 – MsgBox)

❶ .... event occurs when selecting an item from **(ListBox)** list.

❷ The result of arithmetic Expression **(4 + 3 * 4 / 2)** is ....

❸ To view message box including the statement (You are winners), the code will be .... ("You are winners").

❹ Using .... factor results in errors in the operation when the value of the left side not equal to the value of the right side.

❺ To repeat the code for a certain number of times.

★ Fourth: Display the following values by using (For...Next):

❶ (15 – 16 – 17 – 18 – 19)
❷ (9 – 8 – 7 – 6 – 5)
❸ (42 – 33 – 24 – 15)
❹ (30 – 35 – 40 – 45 – 50)
❺ (16 – 12 – 8 – 4 – 0)

★ Fifth: Check the following codes giving the value of each variables (X and Z) every time it changes:

```
Dim X , Z  as Single
  X = 4,5
    For Z = 0 To 8 Step 3
       X = X * 2
    Next
```

★ Sixth: What are (X) values in the following codes:

❶ For X = 1 To 25 Step 3
❷ For X = 1,5 To 4,5 Step 0,5
❸ For X = 2 To 6
❹ For X = 5 To 30 Step 5
❺ For X = 20 To 4 Step -4

Sample Test 4 April

★ First: Choose the correct answer:

❶ Use the word ……………… to declare variables.
(Const – Dim – Start)

❷ Do While statement ends with ……………………
(Next – Loop – End)

❸ In (**If**) conditional statement when the condition is ………, the codes following **Else** will be executed.
(True – Then – False)

❹ Use the word ………………… to declare constants.
(Const – Dim – Start)

❺ In the conditional expression (**S > = 5**): the value is …………
(S – > – 5) and………… is the variable. (S – > – 5)

❻ In the (Do While …. Loop) if the condition result is ………, it execute code followed condition.
(True – false – No)

★ Second: State whether the following statements are true (✓) or false (×):

❶ There is more than one condition in (**Select … Case**) statement. ( )

❷ The value of the increment step in (**For** … **Next**) is optional. ( )

❸ The number of possible branches when using (**If .. Then .. Else**) statement is one. ( )

❹ The use of (**Else**) keyword is optional in (**Select … Case**) statement. ( )

❺ **For Z = 20 To 2 Step -2** is **True** code. ( )

❻ The result of the conditional expression (**8 >= 7**) is false. ( )

❼ The operator " **#** " is one of the comparison operators. ( )

★ **Third: Choose from (a) with appropriate column (b):**

(A)		(B)	
1	The symbol **< >**	**A**	The variable is used for storing the Integer data.
2	vbCrLf	**B**	To store a String value
3	3 x 3	**C**	Called is not Equal.
4	Short	**D**	The command Msgbox("3" & "x" & "3" & "=") displays a message box
5	Char	**E**	is used to create a new line.

★ **Fourth: Put each word in the right place:**

(two hashes – False – Greater than or equal – Case Else
Items – "Me" – Index)

1. The reserved word ………… express the current form.
2. Give the result of the following code, (25 Mode 8 = 0) ………
3. ……… indicate the number of the item in the (ListBox) and starts the indexing from Zero.
4. To store a Date or Time, type the value between ……………..
5. In (Select … Case) statement we can be dispensed ……… as long as there is no need.
6. You can add items in the ListBox using the ………… property in design mode.
7. The result of comparison operator (**>=**) is …………….

★ **Fifth: Re-write the code using (Do …. While) statement:**

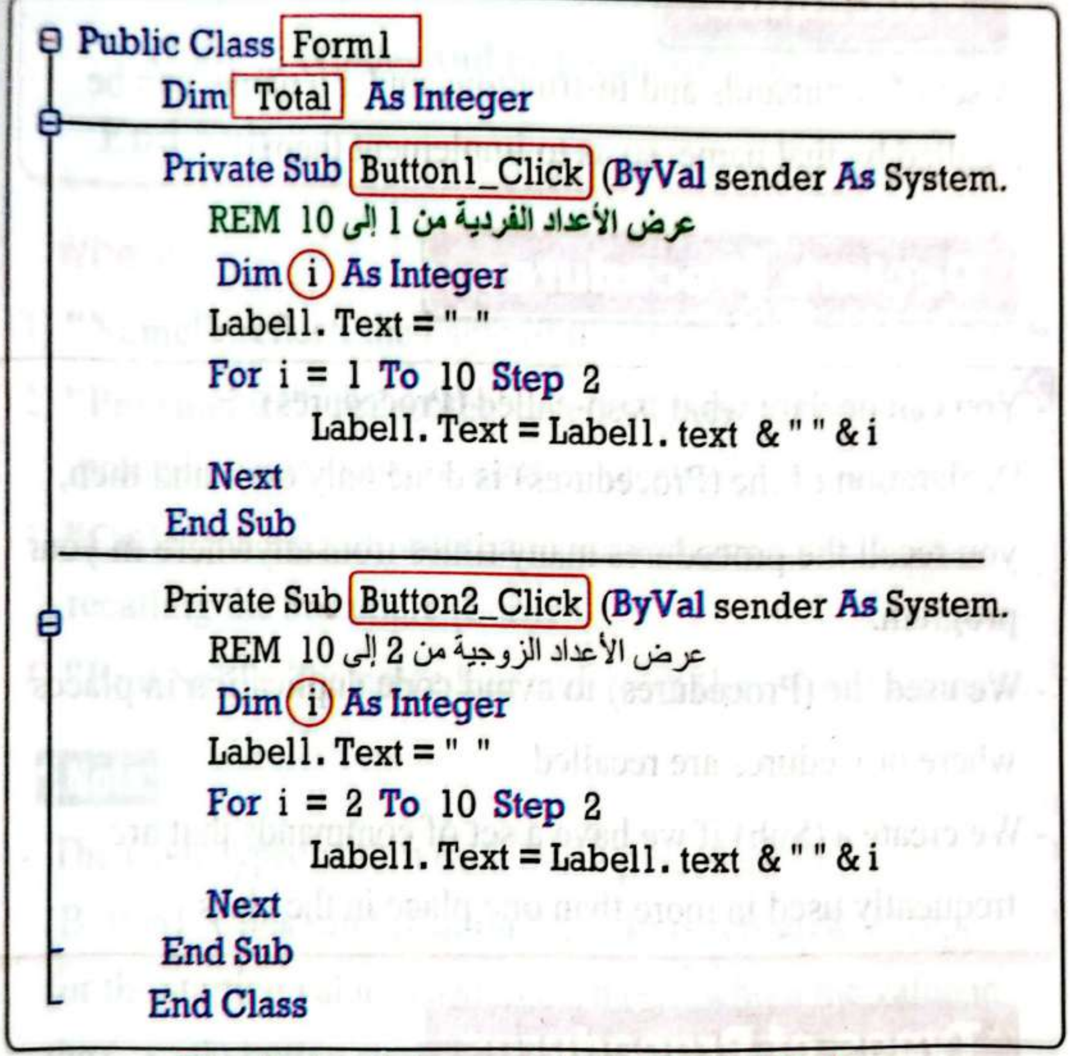
```
Dim X , Z  as Single
    For Z = 0 To 10 Step 3
        X = X * 2
    Next
    MsgBox("X" & " " & "=" & " " & X)
```

Procedures

- Dear Student, when you add a new form window, a new Class is created as Form1. Within the scope of this class we declare:

(1) Event procedures. **(2)** Variables.

(3) Constants. As shown in the following figure.



```
Public Class Form1
    Dim Total As Integer

    Private Sub Button1_Click (ByVal sender As System.
        REM 10 عرض الأعداد الفردية من 1 إلى
         Dim i As Integer
        Label1. Text = " "
        For i = 1 To 10 Step 2
               Label1. Text = Label1. text & " " & i
        Next
    End Sub

    Private Sub Button2_Click (ByVal sender As System.
        REM 10 عرض الأعداد الزوجية من 2 إلى
         Dim i As Integer
        Label1. Text = " "
        For i = 2 To 10 Step 2
               Label1. Text = Label1. text & " " & i
        Next
    End Sub
End Class
```

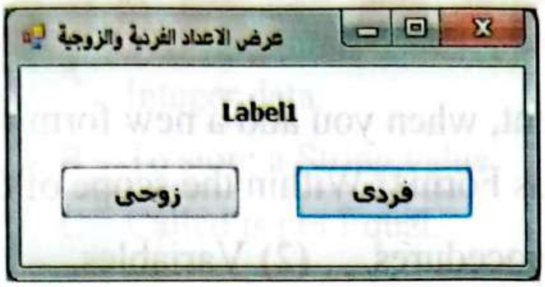
The declared elements in the Code Window

(1) "Class" is under the name **(Form1)**.

(2) "Variables" are under the names **(total, i)**.

(3) "Event procedures" are under the name of **(Button1_Click, Button2_Click)**.

- When you run the program, the user interface is displayed as shown in figure.



Procedure

- A set of commands and instructions under a name, can be recalled by that name, so as to implement them.

Declare Procedures

- You can declare what is so-called (Procedures).
- Declaration of the (Procedures) is done only once and then, you recall the procedures many times from anywhere in your program.
- We used the (Procedures) to avoid code duplication in places where procedures are recalled.
- We create a (Sub) if we have a set of commands that are frequently used in more than one place in the class.

Types of Procedures

- These procedures in the language (VB.NET) are either:

(1) Sub procedure (Sub) that does not return a value.

(2) A function that returns that returns a value.

First: Declaration of a Sub Procedure

- When you create sub procedure, you should declare it by the following syntax:

The general syntax for declaring Sub

```
Sub Name (Parameters)
    Code ... (Codes and instructions to be executed)
End Sub
```

Where:

(1) **"Name":** reflects the name of the procedure.

(2) **"Parameters":** reflect the values that were used inside the procedure code that are used on recalling the procedure.

(3) **"Code":** is a set of orders and instructions carried out on recalling the procedure (Sub).

(4) **"End Sub":** The procedure ends with (End Sub) statement.

*** Note:**

- The Code typed within each event procedure for (Button1_Click) and (Button2_Click) is repeated; except for the starting value typed in each one; where the value in the (الزوجى) button starts by (2), and in the (الفردى) button starts by (1).

Procedures

PROCEDURE
1.
2.
3.
Al-Faez

Exercise

Declaring and calling Procedures

- Use the Sub procedure to avoid code duplication as shown in figure:

```
Public Class Form1
    Dim Total As Integer
________________________________________________
Private Sub Button1_Click (ByVal sender As System, Ob
        REM 10 عرض الأعداد الفردية من 1 إلى
        ShowOddOrEven ( )
    End Sub
________________________________________________
Private Sub Button2_Click (ByVal sender As Object, Ob
        REM 10 عرض الأعداد الزوجية من 2 إلى
        ShowOddOrEven ( )
    End Sub
________________________________________________
    Sub ShowOddOrEven ( )
        Dim i As Integer
        Label1. Text = " "
        For i = 1 To 10 Step 2
            Label1. Text = Label1. text & " " & i
        Next
    End Sub
End Class
```

Recalling a (Sub) Procedure

Recalling a (Sub) Procedure

Recalling a (Sub) Procedure

Code executed when you recall the (Sub) Procedure

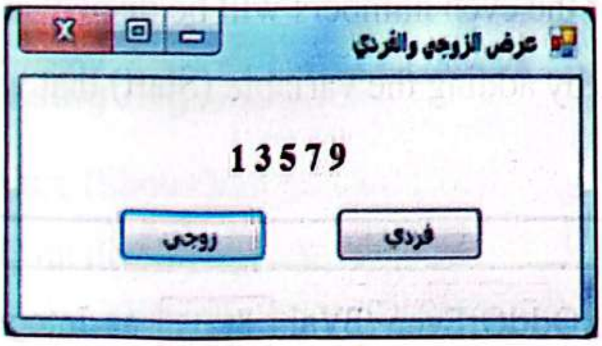
Declaring and Recalling a Procedure

- We declared a procedure called (ShowOddOrEven) that contains the repeated code.
- The procedure is executed by typing its name in any other

procedure within the class, such as typing its name in each of the event procedures **(Button1_Click)** and **(Button2_Click)**.

Notice:

. When testing the program, we find that both buttons, the **(الزوجى)** button and the **(الفردى)** button; when clicking any of them, they give the same result, because the starting value of the iteration (repetition) in both procedure has the same value **(1)**. As shown in above figure.



1 3 5 7 9

User interface

```
Sub ShowOddOrEven ( )
        Dim i As Integer
        Label1.Text = " "
        For i = 1 To 10 Step 2
              Label1.Text = Label1.text & " " & i
        Next
    End Sub
```

Declaring a Parameter

Starting value of the repetition

A part of the code window

- The Parameters should be used as shown in the following practice:

Exercise

Declaring and using parameters

To solve the previous problem:

- The procedure (ShowOddOrEven) must receive the values **(1)** or **(2)** on recalling it.
- This value is used to specify whether the odd numbers will be displayed or the even numbers will be displayed.
- This is done by adding the variable (Start) that will be recalled later.

```
Sub ShowOddOrEven (BVal Start as Integer)
        Dim i As Integer
        Label1. Text = " "
        For i = Start To 10 Step 2
                Label1. Text = Label1. text & " " & i
        Next
    End Sub
```

Declaring a Parameter

Using this Parameter

- A sub Procedure of the name (ShowOddOrEven) has been declared and a Parameter named (Start) has been also declared and used in the code to specify the starting value of the iteration (repetition), accordingly it displays odd or even numbers.

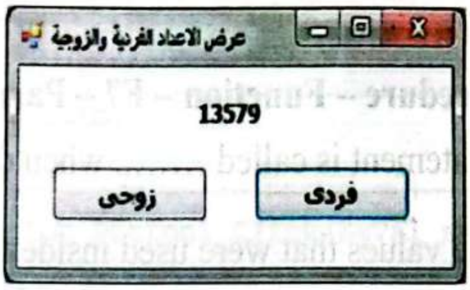
```
Private Sub  Button1_Click  (ByVal sender As System, Ob
        REM  عرض الأعداد الفردية من 1 إلى 10
        ShowOddOrEven ( 1 ) ←— Setting an Argument value
    End Sub
─────────────────────────────────────────
Private Sub  Button2_Click  (ByVal sender As Object, Ob
        REM  عرض الأعداد الزوجية من 2 إلى 10
        ShowOddOrEven ( 2 ) ←— Setting an Argument value
    End Sub
```

Passing Arguments to Procedures

- The sub Procedure (ShowOddOrEven) has been recalled twice, the value of **(1)** on displaying odd numbers, and other value **(2)** on displaying even numbers, this is called (Argument) value.

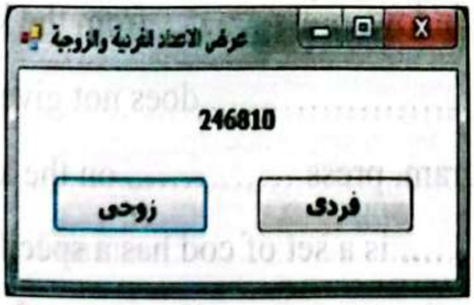
Notice:

- On testing the program, we find that both buttons, the (الزوجى) button and the (الفرد) button when clicked, give different results.


عرض الاعداد الفردية والزوجية
زوجى
فردى

```
13579
```

On clicking the (الفردى) button


عرض الاعداد الفردية والزوجية
زوجى
فردى

```
246810
```

On clicking the (الزوجى) button

- **Note:**

- In the procedure declaration, we can use **more than one Parameter**.
- When the procedure is recalled, we determine values of the outside procedure called (Argument).

Questions ?

★ **First: State whether the following are true (✓) or false (×):**

❶ The Procedure is called one time only. (   )

❷ The Procedure is a set of commands and instructions has a specific name. (   )

❸ Of the examples of declaring (Block) is (If … Then) statement. (   )

❹ The Sub Procedure used for typing the code to facilitate reading and understanding it. (   )

❺ When you add a new form window, a new Class is created as Form1. (   )

★ **Second: Complete the following sentences from between the brackets:**

(Sub – F5 – Procedure – Function – F7 – Parameters – Block)

❶ (If … Then) statement is called …….. when declaring it.

❷ …….. reflect the values that were used inside the procedure code that are used on recalling the procedure.

❸ To show code window, press ……… from the keyboard.

❹ The procedure ……………….... does not give a value.

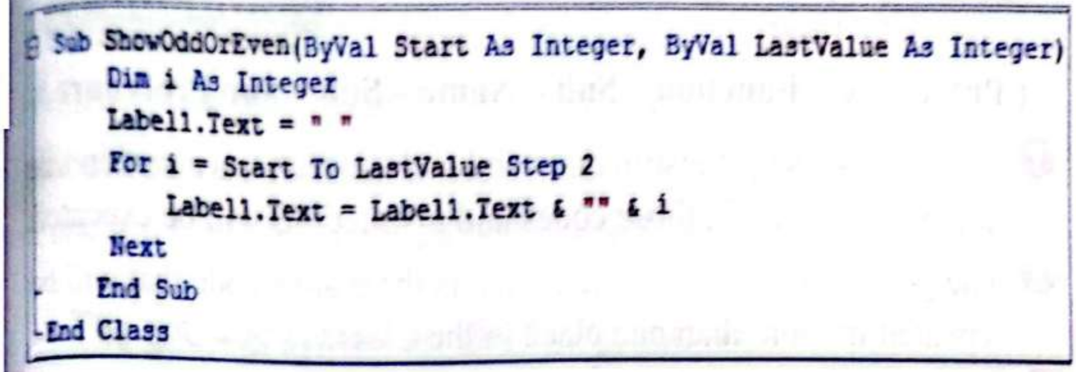
❺ To start the program, press ………….. on the keyboard.

❻ The ……………….. is a set of cod has a specific name.

❼ There two types of procedures Sub and …………..

★ **Third: Complete the following sentences from between the brackets:**

(ShowOddOrEven - Integer - Sub - Start - End Sub – Last Value)



```
Sub ShowOddOrEven(ByVal Start As Integer, ByVal LastValue As Integer)
    Dim i As Integer
    Label1.Text = " "
    For i = Start To LastValue Step 2
        Label1.Text = Label1.Text & "" & i
    Next
   End Sub
End Class
```

❶ .... express the beginning of the procedure.

❷ The name of the procedure ....

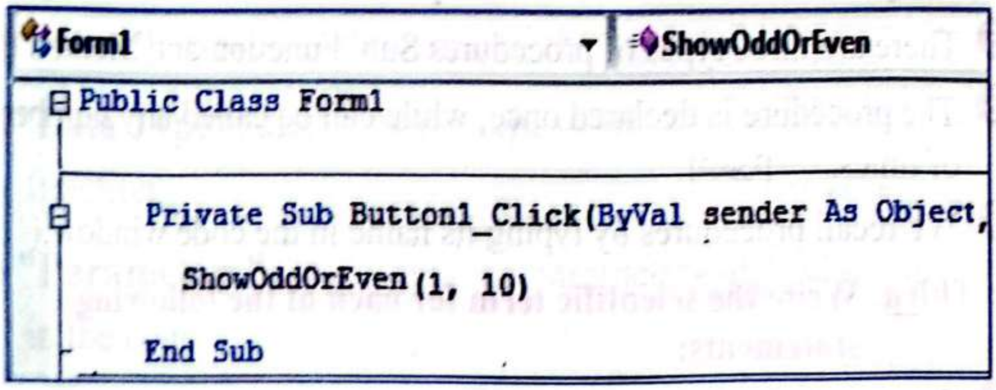
❸ Parameters given to this procedure ...., ...

❹ Parameters are declared of the .... type.

❺ .... express the ending of the procedure.

★ **Fourth: Complete the following sentences from between the brackets:**

(Button1_Click – Form1 – Sub – ShowOddOrEven(1, 10) – Form1 – End Sub)



```
Public Class Form1

        Private Sub Button1_Click(ByVal sender As Object,
            ShowOddOrEven(1, 10)
        End Sub
```

❶ Form of name ....

❷ A Class of name ....

❸ Event Procedure of name ....

❹ .... to call the Sub Procedure.

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Questions from governorates exams ?

★ **First: Complete the following sentences from between the brackets:**

(Procedure – Function – Sub – Name – Sub – Sub Procedure)

1. ………. is a set of instructions and codes which has a certain title and when calling it, those codes and instructions will be executed.
2. The goal of the …………………... is there are a code that will be repeated in more than one place in the Class. [كفر الشيخ]
3. We call the procedure by typing its ………… in the code window.
4. There are two types of procedures …………… and ……………
5. The procedure begins by code …………………

★ **Second: State whether the following statements are true (✓) or false (×):**

1. Procedure (Sub) has return value. [البحيرة] (   )
2. A Sub procedure begins with an (If) statement. [القليوبية] (   )
3. Several Parameter can be used when declaring procedure. (   )
4. The procedure cannot be called any number of times. [الشرقية] (   )
5. There are three types of procedures Sub, Function and Method.(   )
6. The procedure is declared once, while can be called any number of times. [البحيرة] (   )
7. We recall procedures by typing its name in the code window.(   )

★ **Third: Write the scientific term for each of the following statements:**

1. Express the beginning of the procedure.
2. It is a set of code has a specify name.
3. Reflect the end of the procedure.
4. It is a method to receive previously undefined values from out the procedure but they are determined when calling this procedure.

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Second Declaration of a Function

Function

- Function is a set of commands under a particular name that should express its task.
- Function is applied to Parameters and returns a value.

The general syntax for declaring Function

```
Function  Function Name  (Parameters)  As Data Type
    Code
  Return Value
  End  Function
```

Where:

(1) Function: The Function begins with a Function word.

(2) "Name": expresses the name of the function.

(3) "Data Type": identifies the type of the returned value of the function.

(4) "Parameters": represents the parameters that will be used in the code.

(5) "Code": is a set of commands and instructions that will be executed on calling the Function.

(6) "Value": is the returned value by the function.

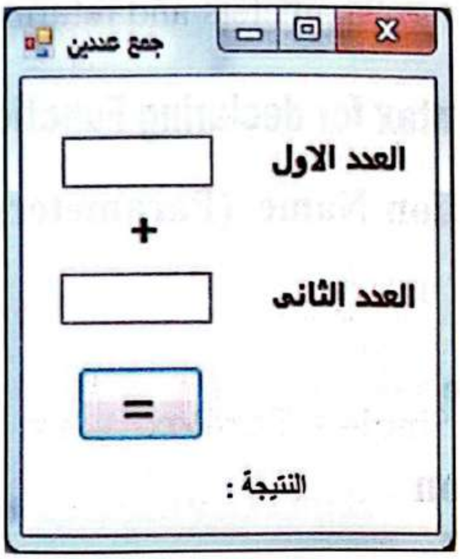
(7) End Function: The Function end with a Function words.

Exercise

Calculate the sum of two numbers:

- **Dear student,** with the help of your teacher do the following:

(1) Design a Form window as shown in figure:



User interface

(2) Open the Code Window, press **(F7)** from keyboard.

- Type the code as the following:

```
    Public Class Form5
Function sum (ByVal First As Single, ByVal Second As single) As single
            Dim Total As single
            Total = First + Second
            Return Total
        End Function
    End Class
```

The code window where the function (sum) is declared

Notice:

. We declared the (Sum) Function; of Data Type (Single) that receives two values (First and Second).

. A variable named "total" has been declared of type (Single) for which we allocated the sum of the two values (First) and (Second), to return the value (total) using (Return).

(3) Create an event procedure for **Button1**, and then type the code as follows:

```
Private Sub Button1_Click (ByVal sender As Object, Les
    Dim x AS Single = TextBox1. Text
    Dim y AS Single = TextBox2. Text
     Label4. Text = Sum (x, y)
 End Sub
 End Class
```

Recalling the (sum) function

Notice the following:

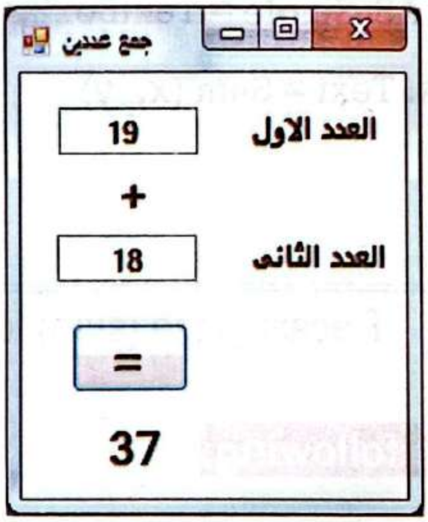
(a) The variables (x) and (y) have been declared and the user input values were assigned to each one of them in (TextBox).

(b) To display the summation, the value of the (Sum) function has been assigned to the Property (Text) of (Label4) control after receiving the two values (x), (y).

- Remember that:

Variables	We can assign values for the Variables; during the declaration and the execution of the Program instructions, as well as using these stored values.
Constants	We should assign values to Constants; during the declaration only, as well as using these stored values.
Functions	It is recalled and returns a value in the light of the values assigned to the function.

(4) Press (F5) key to execute the program, then enter the values as shown in figure:



جمع عددين

العدد الاول 19

+

العدد الثانى 18

=

37

✷ From the previous example, it's clear that:

(1) we can declare a Function..

(2) we can determine its Parameters.

(3) we can specify the Function Type.

(4) we can type the code within the scope of this Function.

(5) we can return a value using the Return statement.

Questions ?

★ **First: State whether the following statements are true (✓) or false (×):**

1. The procedure is declared once, while can be calling any number of times. ( )
2. It is not necessary to announce the function before it is used.( )
3. The return value of the function (Area) is (Single) as demonstrated in the declaration:
   Function **Area** (ByVal **radius** As Single) As Integer. ( )
4. The parameters of a procedure can receive values from outside a Procedure. ( )
5. Parameters given to any Procedure can be (an abstract value or a variable or a constant or a function). ( )
6. The sub procedure doesn't return any value, while the function returns a value. ( )
7. It is required when declaring procedures; that at least one parameter is used. ( )
8. The property (SelectedIndex) determines the selected item in a (Listbox). ( )

★ **Second: Type in front of each statement in column (b), the appropriate number of column (a):**

(A)		(B)	
(1)	Value	**A**	It is recalled and returns a value in the light of the values assigned to the function.
(2)	Function	**B**	Is used on the right side of the assignment statement and a value is assigned to it in declaration only.
(3)	Variables	**C**	is the returned value by the function.
(4)	Constants	**D**	Is used on both sides of the assignment statement.

★ **<u>Third</u>: From the demonstrated code extract the following:**

```
Sub ShowOddOrEven(ByVal Start As Integer)
   Dim i As Integer
        Label1. Text = " "
     For i = Start To 10 Stop 2
        Label1. Text = Label1. Text & " " & i
     Next
 End Sub
```

❶ Procedure Name: ……………………………………………………..

❷ Parameters given to this procedure and their types: ……………..

★ **<u>Fourth</u>: From the demonstrated code extract the following:**

```
Function Area(ByVal radius As Single) As Single
   Const x As Single = 22 / 7
   Dim res As Single
     radius = TextBox1. Text
     res = x * radius ^ 2
     Return res
  End Function
```

❶ Procedure Name: ……………………………………………………..

❷ Parameters given to this procedure: ……………………………....

❸ The return value: …………………………………………………….

❹ The Data type for:

A) Function. **B)** Parameter given to a function. **C)** The return value

…………… ……………………………………… ………………….

★ **<u>Fifth</u>: From the demonstrated code extract the following:**

```
Public Class Form5
Function Sum(ByVal First As Single, ByVal Second As Single) As Single
      Dim Total As Single
           Total = First + Second
        Return Total
     End Function
 End Class
```

❶ Procedure Name: ....

❷ Parameters given to this procedure: ....

❸ The return value: ....

❹ The Data type for:

A) Function. **B)** Parameter given to a function. **C)** The return value

....

★ Sixth: Write down if the following is a (Sub) procedure or a function:

A

```
Sub ShowOddOrEven(ByVal Start as integer, ByVal LastValue as integer)
        Dim i As Integer
              Label1. Text = “ “
          For i = Start To LastValue Stop 2
              Label1. Text = Label1. Text & “ “ & i
          Next
    End Sub
```

....

B

```
Function Area(ByVal radius As Single) As Single
       Const x As Single = 22 / 7
       Dim res As Single
         radius = TextBox1. Text
         res = x * radius ^ 2
         Return res
    End Function
```

....

★ Seventh: Complete the following sentences from between the brackets:

(Loop – Counter – "Do ... While" – items)

❶ In the repetition statement .... the repetition occurs when the result of the condition is true.

❷ Do While statement ends with ....

❸ .... property is used to add items to ListBox.

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General questions for the chapter

★ First: Give the suitable term for each sentence:

① Factors that will be used in the code.

② It is used for call the function.

③ We should assign values to its; during the declaration only.

④ We can assign values for its; during the declaration or on the execution of the Program instructions.

⑤ A reserved word used for adding a new line when executing the codes.

★ Second: Choose the correct answers from a, b, or c:

① Procedure is declared:

a) Once **b)** twice **c)** None of the above

② The procedure is called .... in the code window.

a) Once **b)** twice **c)** All of the above

③ Parameters possible to be:

a) If…Then **b)** abstract values **c)** For…Next

④ .... is a set of code have a specific name.

a) Procedure **b)** Variable **c)** Constant

⑤ The types of Procedures in the language Visual Basic.Net:

a) Sub **b)** Function **c)** All of the above

⑥ When adding a new form window, it creates a new .... with the same form name.

a) Select … case **b)** Class **c)** Object

★ Third: State whether the following statements are true (✓) or false (×):

① Procedure **(Sub)** hasn't return value. ( )

② Constants are used to display the current time and date in the computer. (   )

③ We declare the **(Function)** when there is a code that will result in a value to be used. (   )

④ You can call the procedures only once. (   )

⑤ When adding a new form window to the project a class appears with the different name of this form . (   )

⑥ The **Sub** Procedure can be used for typing the code to facilitate reading and understanding it. (   )

⑦ **Procedure** begins by code **(If ... Then)** then the name of the Procedure. (   )

⑧ There two types of procedures **Sub** and **Function.** (   )

⑨ Result of the following code: **If 50 Mod 6 = 5 Then**. (   )

⑩ An **(Else)** statement contains the block of code (statements that follow **(Else)** which is executed if the result of the conditional expression in the **(If)** statement is **(True)**. (   )

★ Fourth: Complete the following sentences from between the brackets:

(Data Type – End Function – A parameter – Functions – Constants – Return value)

① We should assign values to ....; during the declaration only.

② .... need to be declared before use.

③ .... represents the parameters that will be used in the code.

④ .... is the return value when using the function.

⑤ .... identifies the type of the returned value of the function.

⑥ The Function end with ....

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Questions from governorates exams ?

★ **First: Choose the right answer:** [الغربية]

❶ The code (For m = 3 To 15 Step 3) will display....................
(number divisible by 3 – odd number – all number from 3 to 15)

❷ Conditional expression (Do While y > 50) remains true as long as the value of **y** ....
(less than 50 – greater than 50 – equal 50)

❸ Reserved word (vbCrLf) is used to ....
(create a new line – organize code reading – link between text)

❹ The return value of the function (Area) as demonstrated in declaration: (Function Area(ByVal radius As Single) As Integer) is .... (radius – Single – Integer)

★ **Second: State whether the following statements are true (✓) or false (×):**

❶ The value are assigned to the variables while declaring them only and cannot be changed later. ( )

❷ (**Sub**) Procedures cannot be used in VB.NET. ( )

❸ Procedures parameters can be variables. ( )

❹ **Dim** is used to display the current time and date in the computer. ( )

❺ (**Event Procedure**) is of the (**Sub**) type. ( )

❻ The result of the conditional expression (**40 Mod 8 = 0**) is true. ( )

❼ **Function** is recalled and returns a value in the light of the values assigned to the function. ( )

❽ (**For ... Next**) codes, unknown the numbers of iterations that will be. ( )

★ Third: From the following code, extract the following:

```
Function Rectangle(ByVal W As Single, ByVal L As Single) As Single
      Dim Ar As Single
            Ar = W * L
   Return Ar
   End Function
```

❶ Function Name: ……………………………………………………..

❷ Parameters given to this procedure: ……………………………..

❸ The return value: ……………………………………………………

★ Fourth: Give the suitable term for each sentences:

❶ A statement used for repeating a code for a previously unknown number of times.

❷ To repeat the code for a certain number of times.

❸ We can set the it values during or after declaring them.

❹ Is command or more to be replicated and be between the beginning of the loop (for) and its end (Next).

★ Fifth: Correct under line in this statement:

❶ The command Msgbox("3" & "x" & "3") displays a message box containing number 6.

❷ A storage space in the memory: for the data type (Byte); when used, it occupies (5 bytes).

❸ In code: (For X = 1 To 5), value X after the end of the repetition is 3.

★ Sixth: Write a code:

❶ Write **For** statement to display the odd numbers from **(11)** to **(99)**.

❷ Display the value of the variable (Total) in the tool Label3.

❸ The announcement of the value Pi as a suitable constant type, where Pi = 3.14.

School Questions ?

★ First: Answer the questions with the help of the following code:

```
Private Sub Button1_Click (ByVal
        Dim M As Integer
    For M = 1 To 3
        MsgBox ( M )
    Next
End Sub
```

(1) The code is executed when you press ……… on control tool …..

(2) "Dim" is used to declare (variable – constant) with type …………

(3) The variable name used in the iterative loop is: ……………………

(4) The starting value of the iterative loop is ……….. , the end value is ………….. and the value of increment is …………..

(5) Implementation of the iterative loop stops when the value of variable (M) reaches ……………

(6) The code that is repeated is ……………………

★ Second: Answer the following questions with the help of the following code:

```
Private Sub But_Repeat_Click(ByVal sender As System.Opject,
    Dim M As Integer
        Me.Label1.Text = " "
  For M = 5 To 9 Step 2
        Me.Label1.Text = Me.Label1.Text & M & vbCrLf
  Next M
        ……………………………… (The required in line number 7)
  MsgBox ("انتهى البرنامج")
  End Sub
```

(1) The purpose of the code is ……………………

(2) The code is executed when the event ……….. occurs on the control tool ……………………

(3) To declare the variable (M), the command ……….. is used.

(4) The loop statement used is …………………..

(5) The code to be repeated is …………………..

(6) The purpose of the use of concatenation operator & in a the statement (Me.label1.Text = Me.label1.Text & M) is ………..

(7) Type the necessary code to display the final value of the variable (M) after the execution of the iterative loop in a message box …..

★ **Third: Answer the following questions with the help of the code**

```
     Dim N, product As Integer
     Dim str As String
          Me. TextBox1. Text = " "
   For N = 1 To 12
        Str = 3 & " x " & N & " = "
        Product = 3 * n
Me.TextBox1.Text = Me.TextBox1. Text & str & product & vbCrLf
    Next N
 End Sub
```

(1) The purpose of the code is …………………..

(2) The purpose of the code (Dim str As String) is to declare a string variable named str. (True - false)

(3) The purpose of the code (product = 3 * n) is assigning the result of multiplying (3) by the variable (n) to the variable product. (True - false)

(4) The purpose of the code (product = 3 * n) is assigning the result of multiplying (3) by the variable product to the variable (n). (True - false)

(5) The purpose of the code:

```
Me.TextBox1.Text = Me.TextBox1.Text & str & product & vbCrLf
```

- Is assigning the value of the string variable "str" and the value of the variable "product" as a value for the property "text" for TextBox1. (True - false)

(6) The purpose of the code part "vbCrLf" is to transition to a new line (True - false)

★ **Fourth: The following code is for typing a multiplication table of number (4) from (1) to (12).**

- **Required:** Modify the code to have a multiplication table of (7) so that the result will be in a TextBox:

```
7x 5 =35
7x 7 =49
7x 9 =63
7x11=77
```

```
    Dim N, product  As Integer
    Dim str  As String
        Me.TextBox1. Text  =  " "
   For N  =  1  To  12
       Str  =  4  &  " x " &  N  &  " = "
    product  = 4 * N
Me.TextBox1.Text = Me.TextBox1. Text & str & product & vbCrLf
   Next N
 End Sub
```

★ **Fifth: The purpose of the following code is to type a multiplication table of (9) by the numbers from (1) to (10).**

- **Required:** Correct the four errors in the code, until we get the correct result of the code execution in the table.

```
   Dim N, product  As String
       Dim str  As String
           Me. TextBox1. Text  =  " "
   For  N =  1  To  10  Step -1
        Str  =  9  &  " x " &  N  &  "= ".
        product  = 9 + N
Me.TextBox1.Text = Me.TextBox1. Text & str & product & vbCrLf
   Next str
 End Sub
```

	Wrong code	The code after correction
1	....	....
2	....	....
3	....	....
4	....	....

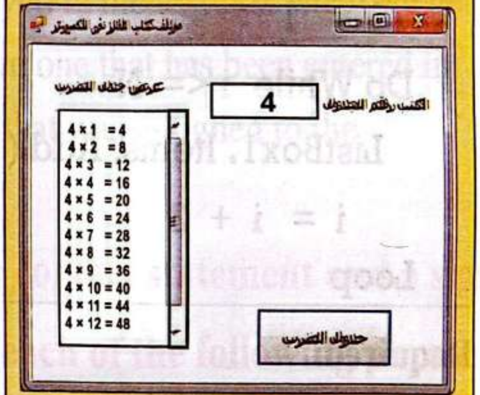
★ **Sixth: he following table contains the code and the form window to print a multiplication table for any number from (1) to (12).**

Required: In the following table, complete using the necessary code to get the correct output after running the program:

Code

```
Dim M, product, NUM As Integer
Dim str As String
 NUM = Me. TextBox2. Text
   Me. TextBox1. Text = " "
 For M = 1 To 12
....... = NUM & " x " & M & " = "
    product = NUM * M ..........
Me.TextBox1.Text = Me.TextBox1._
Text & str & product & vbCrLf .....
```

User interface



```
4 × 1  = 4
4 × 2  = 8
4 × 3  = 12
4 × 4  = 16
4 × 5  = 20
4 × 6  = 24
4 × 7  = 28
4 × 8  = 32
4 × 9  = 36
4 × 10 = 40
4 × 11 = 44
4 × 12 = 48
```

★ **Seventh: With the help of the code, answer the following questions:**

```
For i = 1 To B Step C
  Me.TextBox1. Text = Me.TextBox1. Text  & i  & vbCrLf
Next
```

(1) The purpose of the code ....

(2) The name of the counter variable ....

(3) The iterative loop begins with the value ....

(4) The iterative loop ends with the value ……………………………

(5) the value of the increment of counter ……………………………

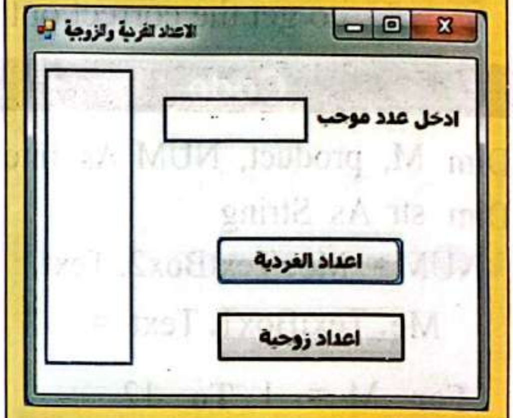
(6) The purpose of (vbCrLf) is ………………………..………………

★ **Eighth:** The following code is used to input a positive number, and when you press the "odd numbers" button, odd numbers from (1) to the positive number that has been entered is typed, and if you press, "Even numbers" button , odd numbers from (1) to the positive number that has been entered is typed.

Code

```
Dim N, i As Integer
   N = TextBox1.Text
ListBox1. Items. Clear ( )
   i = 1
Do While i <= N
   ListBox1. Items. Add (i)
     i = i + 2
Loop
```

User interface



- Required:

(1) The loop statement in the program is …………..

(2) The purpose of the code (**i = i + 2**) in the line before the last is …

(3) The purpose of the Loop is ………………………..………………

(4) Select the right choice to determine the nature of each part of the line of code components …………………………………..

ListBox1. Items. Clear ( )

أداة تحكم ○
متغير ○

ثابت ○
خاصية ○

وسيلة ○
خاصية ○

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★ Ninth: The purpose of the following code is entering a positive number, then the sum of odd numbers is displayed in text box.

```
Dim i , N , Sum As Integer
    N = TextBox1. Text
    i = 1
Do While i <= N
    Sum = Sum + i
        i = i + 2
Loop
   Label3. Text = Sum
```

(1) The purpose of the code (N = TextBox1.Text) is ....

(2) The Loop statement used in the code is ....

(3) The loop statement will be implemented as long as ....

(4) The sum of odd numbers is displayed in the text box when we get to a number larger than the positive one that has been entered in the control tool .... and that was assigned to the variable ....

★ Tenth: Tick (✓) in front of the correct statement and a sign (×) in front of the wrong one for each of the following phrase:

(1) The procedure is a set of commands and instructions that are repeated for specified number of times. (   )

(2) The procedure is a set of commands and instructions under a certain name, and when you recall this name, these commands and instruction are implemented. (   )

(3) The purpose of the use of procedures is repeating typing a specific code several times in the program. (   )

(4) When we have a specific code that we want to be replicated in more than one place in the class, we use the "Function". (   )

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(5) The group of commands and instructions that are placed under a name, when we implement them, they return a value. We call this action "procedure". ( )

(6) The group of commands and instructions that are placed under a name, when we implement them, they return a value. We call this action "Function". ( )

(7) When we have a specific code that we want to be replicated in more than one place in the class, we use the "Procedure". ( )

(8) Parameters are used to receive values from outside the procedure on recalling it. ( )

(9) When you recall a procedure with the name Taxes (0.05), the value between the brackets is called Argument ( )

(10) When you call a procedure with the name Taxes (0.05), the word taxes is called Argument ( )

(11) The declaration of a function starts with (Sub) and ends with (End Sub). ( )

(12) The declaration of a function starts with (Function) and ends with (End Function). ( )

(13) We resort to the use of the Function if our code results in a value we need. ( )

(14) We resort to the use of the Procedure if our code results in a value we need. ( )

(15) The Function is a set of commands and instructions with a specific name that can take Parameters, and return a parameter.( )

(16) The Function is a set of commands and instructions with a specific name that can take values, and return a value. ( )

(17) The demerit of the language of VB.Net is that it allows the programmer to declare other functions and procedures prepared by him. ( )

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Eleventh: With the help of the following code, complete the following table:

```
Sub ShowOddOrEven (ByVal  Start As Integer)
        Dim i As Integer
              Labell. Text = " "
      For i  =  Start  To  10  Step  2
             Labell. Text = Labell. text & " " & i
      Next
End Sub
```

(1) Procedure name ....

(2) Parameter was declared with the name .... and type ....

(3) The iterative loop starts from the value ....

(4) The increment value of the iterative loop equals ....

(5) When calling the procedure to execute the code starting from the value ....

★ Twelfth: With the help of the code, complete the following table

```
Function xxx (ByVal YYY As Integer, ByVal ZZZ As Integer) As Single
  Code
 Return  RRR
 End Function
```

(1) Function name ....

(2) Type of returned value of the function ....

(3) Parameter value that will be used in the code ....

(4) Returned value of the function ....

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Chapter Four

Cyber bullying

✱ By the end of this chapter, you will be able to:

- ✱ Define Cyber bullying.
- ✱ Determine the means of cyber bullying.
- ✱ Distinguish between cyber bullying forms.
- ✱ Follow the correct procedure to face cyber bullying.
- ✱ Ask for help from individuals and organizations responsible for protection when exposed to cyber bullying.
- ✱ Mention organizations and institutes responsible for protection when exposed to cyber bullying.

Cyber bullying

★ **Introduction:**

- The ethics of dealing with the internet with all the means of information and communication of topical interest to individuals, communities and nations.
- So, we seek to raise awareness among students and our children the dangers of dealing with the internet.
- We provide some information and skills necessary to students to raise their degree of personal safety with respect to online cyber bullying.
- Through the internet, we can learn, entertain, communicate and talk.

there are many risks that we can be exposed to, including

(1) Getting wrong information.

(2) Falling prey to some of the aggressors across modes of electronic communication.

(3) Violation of privacy.

(4) Identity theft.

(5) Getting our account stolen (on the social networking sites like Facebook or email).

(6) Subjecting our system to the risk of infection by viruses or spyware, or software piracy and others.

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The definition of cyber bullying

* Cyber bullying is a deliberate aggressive behavior from one person to another through electronic modes of communication.

First The forms of cyber bullying

(1) Harassment
(2) Annoyance.
(3) Embarrassment.
(4) Intimidation.
(5) Threat
(6) Blackmailing ..etc…

Second The Electronic Media

* Electronic media is a technology used by the electronic aggressor, and they are various including the following:

(1) Email.
(2) Forums.
(3) Instant Message.
(4) Facebook.
(5) Blogger.

Third Forms of Cyber Bullying

Cyberbullying: Identification, Prevention, & Response

* **Forms of cyber bullying include:**

(1) Anonymity

- It is the use of pseudonyms (aliases) to hide e-aggressor's identity for impunity.

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(2) Harassment

- It is aggressive messages directed against one or more persons.

(3) Cyber stalking

- It is a form of electronic harassment where the aggressor frequently traces and chases a particular person in all electronic media.

(4) Flaming

- It is a publication of hostile and vulgar words against one or more through a media and electronic communication.

(5) Outing

- It is a dissemination of information about a specific person or more abusively.

(6) Exclusion

- It is to ignore one or more persons through the electronic media.

(7) Cyber threats

- It is an email or e-message carrying a threat and intimidation to one or more persons.

Fourth How to protect yourself from Cyber bullying?

- **By following the safe use of the internet as follows:**

(1) Don't share your password with anyone.

(2) Make a password that is difficult to predict.

(3) Don't publish (post) any private data.

(4) Avoid deleting Cyber bullying messages.

(5) Don't interview anyone you know via the internet.

(6) Be careful! Don't send any electronic message when you are angry.

(7) Inform your parents with what annoy you when you use the internet.

(8) The download of software from the internet should be done under the supervision of your teacher or your parents.

Everyday situations that show the importance of using the internet safely:

(1) **Amro said to Yasmeen** "I want to send a message to a friend but I don't have an e-mail account. Can you give me your user name and password to be able to send this message?"

★ In your opinion, what would you do?

The Answer:

Don't share your password with anyone.

(2) **Amro** created his own e-mail account. Yasmeen tried to deduce his password by trying his name and year of birth. Finally, she managed to open his account.

★ In your opinion, what's the mistake Amr made and how to avoid it?

The Answer:

Amro chose a password easily deduced, so to avoid it he must choose the word with a high degree of difficulty. It must contain numbers, letters and special characters, and more than eight characters, and must be changed each period of time.

) **Ramy** subscribed to one of the social networking sites (Facebook) and published some private data including family photos with daily activities. A hacker used this information in stealing Ramy's family.

★ In your opinion, what should Ramy have done? Is there any harm he can face because of that?

✱ **The Answer:**

Don't publish any private data; Of course, he will have a lot of harm such as exposure to libel, blackmail or identity theft as a result of the occurrence of family photos in the hands of irresponsible people.

(4) **A student** complained to his teacher that his colleague cursed (insulted) him in an email message, the teacher asked him to read this message, the student replied that he had deleted the message, the teacher said to him, "You lost conviction evidence".

★ In your opinion what should this student have done?

✱ **The Answer:**

Avoid deleting cyber bullying messages.

(5) **Amr** said to his father, "I have known someone in a chat room, and he would like to meet me".

★ In your opinion, what was his father's reply?

✱ **The Answer:**

He warned his son very much of meeting strangers he knew via the inter.

(3) **Ramy** subscribed to one of the social networking sites (Facebook) and published some private data including family photos with daily activities. A hacker used this information in stealing Ramy's family.

★ In your opinion, what should Ramy have done? Is there any harm he can face because of that?

✸ **The Answer:**

Don't publish any private data; Of course, he will have a lot of harm such as exposure to libel, blackmail or identity theft as a result of the occurrence of family photos in the hands of irresponsible people.

(4) A student complained to his teacher that his colleague cursed (insulted) him in an email message, the teacher asked him to read this message, the student replied that he had deleted the message, the teacher said to him, "You lost conviction evidence".

★ In your opinion what should this student have done?

✸ **The Answer:**

Avoid deleting cyber bullying messages.

(5) Amr said to his father, "I have known someone in a chat room, and he would like to meet me".

★ In your opinion, what was his father's reply?

✸ **The Answer:**

He warned his son very much of meeting strangers he knew via the inter.

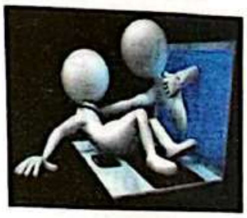
(6) A big argument occurred in the dialogue between Amr and Yasmin through a social networking site or a chat room; Amr became very angry and sent a message of intimidation and threat to Yasmin.

★ What is your opinion of Amro's behaviour?

✸ The Answer:

It was an act of haste, and he should have followed the rules of safe use of the internet, "Be careful of sending an email when you are angry".

(7) **Amr** used the internet in the work of some of the school activities in collaboration with his colleagues, and noticed that when he used it, he receives instant messages in the inductance programs chat that were offensive to him, so he thought about moving away from the use of the internet to avoid abuse and to defend himself..



★ In your opinion, what he should do?

✸ The Answer:

It was a negative act, and he should have asked for help from his father, older brother or computer teacher to help him to face the abuse positively.

(8) **Yasmin** used to download any programs from all the sites she visited on the Internet. This infected her computer with viruses and spyware.

★ Do you agree to download any programs via unknown internet sources?

The Answer:

No, I do not: but she should have made sure of these programs and their sources and followed intellectual property rights to these programs, and consulted the people of experience (her colleagues or computer teachers, for example).

Extra information

- Related topics that you can search for (the ones you have already studied) are:
  - o Revealing identity.
  - o Firewall.
  - o Secret codes.
  - o Asking for help.

Questions ?

★ **First**: **Complete the following sentences from between the brackets:**

(delete - Internet - Anonymity - share - publish - password)

① You must set up a .... that is difficult to predict.

② Not to interview anyone you met through the ....

③ Should not .... cyber bulling messages.

④ Should not .... any private data.

⑤ Do not .... share anyone your password.

⑥ .... is considered one of the Forms of cyber bullying.

★ **Second: Type in front of each statement in column (b), the appropriate number of column (a):**

	Column (a)		Column (b)
1	It is to ignore one or more persons through the electronic media.	A	Outing
2	It is a dissemination of information about a specific person or more abusively.	B	Cyber bullying
3	It is aggressive messages directed against one or more persons.	C	Exclusion
4	It is a deliberate aggressive behavior from one person to another through electronic modes of communication	D	Anonymity
5	It is the use of pseudonyms (aliases) to hide e-aggressor's identity for impunity.	E	Harassment

★ **Third: State whether the following statements are true (✓) or false (×):**

1. Do not share a password with others. ( )
2. The password can be a birthday or something easy to remember. ( )
3. Don't interview anyone you know via the internet. ( )
4. To protect yourself from Cyber bullying, avoid deleting Cyber bullying messages. ( )
5. Flaming is an email or e-message carrying a threat and intimidation to one or more persons. ( )
6. Cyber stalking is a publication of hostile and vulgar words against one or more through a media and electronic communication. ( )
7. Electronic media is a technology used by the electronic aggressor. ( )

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School Questions ?

★ **First: Tick (✓) in front of the correct statement and a sign (×) in front of the wrong one for each of the following phrase:**

(1) Cyber bullying is a deliberately aggressive behaviour, using electronic media for harassment, annoyance, disturbance, intimidation or threatening others. ( )

(2) Cyber bullying is done through electronic means, such as social networking sites. ( )

(3) Stealthy-mail is considered a form of Cyber bullying. ( )

(4) Harassment and the threat are of the most important electronic means used in Cyber bulling. ( )

(5) Harassment and blackmailing are forms cyber bulling.( )

(6) Stealing the person's account in the social networking sites or email is one of the risks that we may be exposed to through such media. ( )

(7) Social networking sites help to meet new people you like to see to develop social relationships. ( )

(8) In line with the rules of safe use, you should put an easy password passage, for your private e-mail, in order to be able to remember. ( )

(9) E-exception means following a particular person in all means of electronic communication. ( )

(10) Electronic prosecution is intended to send an e-mail carrying a threat and holiday for one or more persons. ( )

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★ **Second: Complete the following table explaining your opinion of each of the following words:**

Situation		Your opinion in the light of the rules of safe use
1	Put a password is easy conclusion.	....
2	The deployment of a person to his real name, address and telephone number through the electronic media.	....
3	Download any programs available to you on the Internet.	....
4	The fast angry response, to Cyber Bullying may be exposed to him over the Internet.	....
5	Delete all messages that have been threatened you with the in social media sites or e-mail.	....

★ **Third: Everyday situations:**

(1) Someone subscribed to one of social networking sites. Whenever he contacted a member or tried to conduct an immediate conversation, he noticed that no one responded.

[A] What happened is considered a form of............. and it's called ....

[B] What can you do to face this behaviour?

....

(2) You subscribed to one of social networking sites and you were surprised that someone was sarcastically speaking about Egypt and talking inappropriately about its figures.

- Select four positive actions by which you can respond to him:

- ....

Exam Night

* Chapter (1) Data

* On entering these data, it is temporarily stored in the computer memory (RAM).

- To deal with these data we must assign a name and a type to it in memory.
- Visual Basic.Net Language provides many data types, which allow the user to store input values from the user:
- **Character data type (String – Char)**
- **Integer numeric data type (Byte – Short – Integer – Long)**
- **Non-Integer numeric data type (Single – Double – Decimal)**
- **Miscellaneous data types:** that do not fall under the Numeric or the character types such as **(Object – Date – Boolean).**

  (Boolean) For storing logical data **(True or False).**

  (Data) For storing in the form of **date** or **time.**
- The "**integer**" data type occupies **"4 bytes"** of memory storage.
- The range of values for the data type **"Byte"** start with **"0"** and ends with **"255"**.
- The Excellent coder is who saves storage space in the computer's memory.

Constants

* They are places reserved in (RAM) that have data types; on declaring constants, name and data types are determined for them.
* They take a fixed value and do not change during the progress of the program.

Naming rules of Constants & Variables:

(1) Variable names must begin with a letter or underscore (_).

(2) Variable names should not contain symbols or special characters (e.g.: ?,*,^,-,+,. etc.).

(3) Do not use reserved words (Visual Basic.NET Language Keywords) such as (single, Integer, Dim, As).

* **Note:** It also must be the choice of the appropriate type of each of the constants and variables.

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Constants declaration:

- ✶ It is a statement in which the name and type of data and value of the constants are defined.
- ✶ Use the **(Const)** in the declaration of the constants in the language of the VB.NET, as illustrated in the following syntax:

Const	Constant Name	As	Data Type	= Value

Where: Const: declaration command about constants.

- **Constant Name:** the name of the constant.
- **Data Type:** the type of data stored in the constant.
- **Value:** the constant value that stored in the declared constant.

- ✶ The double quotes " " are used if the value of constant is a **string** value.
- ✶ The hashes # # are used if the value of constant is **date** or **time.**

Specifying the scope of declaration for variables and constants

- ✷ When declaring variable or constant in an event, it can't be used out of the range of this event.
- ✷ It is determined the scope of the use that variables or constants by Place of declaring.

Variables:

- Variables are reserved places in computer memory **(RAM)**, declared and determined by its name and type **(Data Type)**, and its value usually changes during the running of the program.
- The variable can take initial value, then value changes during the running of the program

Variables declaration:

We use the Command **(Dim)** to declare a variable in **VB.NET** language.

Dim	Variable Name	As	Data Type	[=Initial Value]

Where: - Dim: is the declaration of variables.

- **Variable Name:** is a variable name.
- **Data type:** is the data type to be stored in the variable.
- **Initial value:** is the initial value that is stored in the declared variable and this part is optional.
- **Value:** The initial value that is stored in the declared variable, [optional].

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★ Assignment statement

- It is assigning a value to a constant or variable.
- It is a statement that has two sides (right hand side and left hand side) separated by the assignment operator (=).
- It takes the value on the right side of the assignment operator (=) and stores it in the variable or constant on the left.

- **"Me"** expresses the current window Form.
- Separates each variable and the other by the concatenation symbol **"&"**.
- The reserved word **(vbCrLf)** is used to create a new line.
- Use the symbol **(_)** to write on more than one line if the code line is too long so you can organize and facilitate the process of reading the (Code).
- The programmer can use the command **(REM)** in writing remarks that can be referred to within the code, it is not compiled.

- Priority rules for Arithmetic operations (Operator Precedence):

Order	Operation	
1	Applying the process inside the brackets from the inside to the outside.	( )
2	Applying the exponent.	^
3	Applying multiplication or division process from left to right, wherever comes first.	*, /
4	The Application of the addition or subtraction process from left to right, wherever comes first.	+ , -

There are three types of errors:

(1) **Syntax Errors** :

- They are errors in the common syntax commands of the language.

(2) **Logic Errors** :

- it happens when we get incorrect results after executing the program because of the wrong formulating arithmetic or logic expressions.

(3) **Runtime Errors** :

- These errors are discovered while running the program.

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* Chapter (2) Branching

Branching using the statement (IF...Then)

- The statement "IF…Then" uses if we had only one choice is executed when the condition is true.

* If the result of condition is "False", the code following "End iF" will be executed if there while the commands after "Then" will be ignored.

* The statements (If…Then) ends with an order "End iF".

Conditional Expressions

✸ The conditional expression consists of three parts as follows:

(1) Comparison operator such as " = , < , >= , <> " preceded by:

(2) An abstract value, a value of a variable or constant or a result of a mathematical expression that is compared with an abstract value ,a value of a variable or constant or a result of a mathematical expression.

- If this condition is met, it means that the result of the conditional expression is "True" and a specific code is executed.

- If the condition isn't met, it means that the result of the conditional expression is "False" and another code is executed.

- There are (6) comparison expression:

Meaning	Operator	Meaning	Operator
Equal	=	Greater than or equal	>=
Not equal	<>	Less than	<
Greater than	>	Less than or equal	<=

Branching using the statement (IF…Then … Else)

★ The **(If .. Then .. Else)** statement is used when there are two alternatives.

- This syntax is used if there is "Code1" that will be executed if the result of condition is "true", or another code "Code 2" is executed if the result of condition is "False".

★ If the result of condition is (true), the statements after (Then) will be executed sequentially until (Else) while the statements after (Else) will be ignored and the code after (End If) will be executed, if there.

★ If the result of condition is (false), the code following (Else) will be executed sequentially until (End iF) while the code after (Then) will be ignored and the code after(End If) will be executed, if there.

★ The statements **(If .. Then .. Else)** ends with "End iF".

★ The function **(Mod)** returns the remainder of the division.

- **MsgBox( )** is a method used to display an error message to user of the program.

Focus( ) is a method used to placed mouse in the text box.

- The string value is empty **" "**, used to clear the contents of the Text box.

Branching using the statement (Select ... Case)

- "Select ... Case" statement is used in Branching depends only on the value of one variable and there are many conditions.
- Branching using **(Select .. Case)** reduces the code and makes it easier and clearer.
- **"Select ... Case"** statement is used when there are more than two possible paths (branches).
- **(Index)** Refers to the item number into the **"ComboBox"** control.
- You can add the items for the ListBox or the ComboBox control through the property **(Items)**.
- We have depended, in writing of the code, on the order of the elements within the tool **(ComboBox)** where the first item has an **(index) 0**, the second item has an **(index) 1** and the third item has an **(index) 2**, .. and, so on.
- The default event for the **(ListBox)** is **(SelectindexChanged)**.

* Chapter (3) Looping and Procedures

Using (For ... Next) statement:

- It is one of the limited loop statements.
- It is used when we want to repeat a code for specific number of time.

```
For Variable =  Start value  To  End value [Step add value]
        Code
    Next [Variable]
```

Note: For, represents start of the limited repetition.

- **Variable:** is the name which represents the counter and its type must be numeric **(integer or decimal)**.

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- **Start Value:** is the start value of the counter or the beginning of repetition is a numeric value.
- **End Value:** is the value of the end of the counter and the end of the repetition is also a numeric value.
- **Add Value:** is the increment value of the counter or value over the counter until it reaches the end value (Optional).
- **Code:** is command or more to be replicated and be between the beginning of the loop (for) and its end (Next).
- **Next:** represents end of the limited repetition.

(1) The default value to increase the counter is positive **1**.

(2) If the value of the increment is positive **1**, it can be dispensed with writing **Step Add Value**, as the default value to increase the counter is positive **1**.

(3) Typing a variable name counter next to **"Next"** optional

(4) The codes are repeated inside the loop until the counter value become greater than the end value.

- We can determine the rate of increment of the variable after (Step) and then type a numeric value or numeric variable.
- The rate of increment should be negative if the starting value is greater than the end value.
- The starting value, the end value, or the increase rate can be a decimal number; in this case the loop variable type should be defined to accept decimals such as **Single** type.
- The starting value, the end value, or the increase rate can be variable.

Using (Do ... While) statement

- The statement **"Do while ... loop"** is used to repeat a specific code for a several times of an unknown end, but based on a specific condition.
- The statement **"Do while ... loop"** is useful if you do not know the number of iterations emphatically.

```
Do While + (Conditional Expression)

     Code
 Loop
```

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- The code between the beginning of the loop "Do While" and its end will be implemented as long as the conditional expression is true.
- If the condition is not met for any reason, we get out of the iterative loop, and implement the code after the Loop if it exists.

• Procedures:

- When you add a new form window, a new Class is created as Form1. Within the scope of this class we declare:

(1) Event procedures. **(2)** Variables. **(3)** Constants..

- **Procedure:** A set of commands and instructions under a name, can be recalled by that name, so as to implement them.

• Declare Procedures

- You can declare what is so-called (Procedures).
- Declaration of the (Procedures) is done only once and then, you recall the procedures many times from anywhere in your program.
- We used the (Procedures) to avoid code duplication in places where procedures are recalled.
- We create a (Sub) if we have a set of commands that are frequently used in more than one place in the class.

There are two types of procedures:

(1) **Sub procedure** (Sub) that does not return a value.

(2) **A function** that returns that returns a value.

Declaration of a Sub Procedure

```
Sub Name (Parameters)
    Code ...
 End Sub
```

*** Note, (1) "Name":** reflects the name of the procedure.

(2) "Parameters": reflect the values that were used inside the procedure code that are used on recalling the procedure.

(3) "Code": is a set of orders and instructions carried out on recalling the procedure (Sub).

(4) "End Sub": The procedure ends with (End Sub) statement.

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- In the procedure declaration, we can use **more than one Parameter.**
- When the procedure is recalled, we determine values of the outside procedure called (Argument).

- Function is a set of commands under a particular name that should express its task. Function is applied to Parameters and returns a value.

Declaration of a Function

```
Function    Function Name  (Parameters)  As Data Type
      Code
   Return Value
   End  Function
```

Note, (1) **Function:** The Function begins with a Function word.

(2) **"Name":** expresses the name of the function.

(3) **"Data Type":** identifies the type of the returned value of the function.

(4) **"Parameters":** represents the parameters that will be used in the code.

(5) **"Code":** is a set of commands and instructions that will be executed on calling the Function.

(6) **"Value":** is the returned value by the function.

(7) **End Function:** The Function end with a Function words.

Notice:

- **Variables**: We can assign values for the Variables; during the declaration and the execution of the Program instructions, as well as using these stored values.
- **Constants**: We should assign values to Constants; during the declaration only, as well as using these stored values.
- **Functions:** It is recalled and returns a value in the light of the values assigned to the function.

* Chapter (4) Cyber bullying

- Through the internet, we can learn, entertain, communicate and talk.
- But there are many risks that we can be exposed to, including:

(1) Getting wrong information.

(2) Falling prey to some of the aggressors across modes of electronic communication.

(3) Violation of privacy.

(4) Identity theft.

(5) Getting our account stolen (on the social networking sites like Facebook or email).

(6) Subjecting our system to the risk of infection by viruses or spyware, or software piracy and others.

- The definition of Cyber bullying

- Cyber bullying is a deliberate aggressive behavior from one person to another through electronic modes of communication.

- The forms of cyber bullying

(1) Annoyance.
(2) Harassment.
(3) Intimidation.
(4) Blackmailing.
(5) Embarrassment.
(6) Threat.

- The Electronic Media

- Electronic media is a technology used by the electronic aggressor.

(1) EMail.
(2) Forums.
(3) Blogging.
(4) Instant Message.
(5) Facebook.

- Forms of cyber Bullying:

(1) Harassment.
(2) Annoyance.
(3) Embarrassment.
(4) Intimidation.
(5) Threat.
(6) Extortion.

- How to protect yourself from cyber Bulling

(1) Don't share your password with anyone.

(2) Make a password that is difficult to predict.

(3) Don't publish (post) any private data.

(4) Avoid deleting Cyber bullying messages.

(5) Don't interview anyone you know via the internet.

(6) Be careful! Don't send any electronic message when you are angry.

(7) Inform your parents with what annoy you when you use the Internet.

(8) The download of software from the internet should be done under the supervision of your teacher or your parents.